

* * C O N F I D E N T I A L * *

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

-----X

JENNIFER S. FISCHMAN,

Plaintiff,

-against-

Index No. 18-cv-08188

mitsubishi chemical holdings, america, inc.;
mitsubishi chemical corporation; mitsubishi
chemical holdings corporation; nicholas oliva, in
his individual professional capacities; donna
costa, in her individual and professional
capacities; and john does 1-10, in their
individual and professional capacities,

Defendants.

-----X

October 7, 2021
10:11 a.m.

DEPOSITION of GERALD LaPORTE, a
Non-Party witness herein, taken by the attorneys
for the respective parties, pursuant to Notice,
held via web conference at the above date and
time before Toni Musacchia, a Stenotype Reporter
and Notary Public within and for the State of New
York.

1 * * C O N F I D E N T I A L * *

2 A P P E A R A N C E S :

3 VALLI KANE & VAGNINI LLP
4 Attorneys for Plaintiff
5 600 Old Country Road, Suite 519
6 Garden City, New York 11530

7 BY: MATTHEW L. BERMAN, ESQ.

8 CLARICK GUERON REISBAUM LLP
9 Attorneys for Defendant, Donna Costa
10 220 Fifth Avenue, 14th Floor
11 New York, New York 10001

12 BY: NICOLE GUERON, ESQ.

13 GORDON REES SCULLY MANSUKHANI, LLP
14 Attorneys for Defendants, Mitsubishis
15 Chemical Holdings America, Inc., Donna Costa and
16 Nicholas Oliva
17 One Battery Park Plaza, 28th Floor
18 New York, New York 10004

19 BY: BRITTANY L. PRIMAVERA, ESQ.
20 and
21 MERCEDES COLWIN, ESQ.

22 SHEARMAN & STERLING, LLP
23 Attorneys for Defendant,
24 Mitsubishi Chemical Holdings Corporation
25 599 Lexington Avenue
New York, New York 10222

BY: SAM JOLLY, ESQ.

20

21 ALSO PRESENT:

22 Jennifer Fischman

23

24

25

* * C O N F I D E N T I A L * *

FEDERAL STIPULATIONS

IT IS HEREBY STIPULATED AND AGREED by and
between the parties hereto, through their
respective Counsel, that the certification,
sealing and filing of the within examination will
be and the same are hereby waived;

IT IS FURTHER STIPULATED AND AGREED that
all objections, except as to the form of the
question, will be reserved to the time of the
trial;

IT IS FURTHER STIPULATED AND AGREED that
the within examination may be signed before any
Notary Public with the same force and effect as
if signed and sworn to before this Court.

1 * * C O N F I D E N T I A L * *

2 THE REPORTER: It is hereby stipulated
3 and agreed by and between counsel for all
4 parties present that pursuant to Federal
5 Rule of Civil Procedure 28 (a) (2), this
6 deposition is being conducted remotely and
7 that the court reporter shall be permitted
8 to administer the oath to the witness via
9 videoconference. The witness and all
10 counsel are in separate remote locations and
11 participating via Zoom, telephone or any web
12 conference meeting platform under the
13 control of Bee Reporting Agency, Inc.

14 It is further stipulated that this
15 videoconference will not be recorded in any
16 manner and that any recording without the
17 express written consent of all parties shall
18 be considered unauthorized, in violation of
19 law and shall not be used for any purpose in
20 this litigation or otherwise.

21 Before I swear in the witness, I will
22 ask each counsel to stipulate on the record
23 that I, Toni Musacchia, the court reporter,
24 may swear in the witness even though I am
25 not physically in the presence of the

1 * * C O N F I D E N T I A L * *

2 witness and that there is no objection to
3 that at this time, nor will there be an
4 objection at a future date.

5 MR. BERMAN: So stipulated.

6 MS. PRIMAVERA: So stipulated.

7 MS. GUERON: So stipulated.

8 MR. JOLLY: So stipulated.

9 THE REPORTER: Ms. Primavera, can you
10 represent that to the best of you knowledge
11 and belief, that the witness appearing today
12 via web conference is, in fact, Gerald
13 LaPorte?

14 MS. PRIMAVERA: Yes, I can.

15 G E R A L D L A P O R T E,

16 the witness herein, having first been duly
17 sworn by Toni Musacchia, a Notary Public in and
18 for the State of New York, was examined and
19 testified as follows:

20 DIRECT EXAMINATION

21 BY MR. BERMAN:

22 Q. Please state your name for the record.

23 A. Gerald LaPorte.

24 Q. Please state your address for the
25 record.

1 G. LaPorte - Confidential

2 A. 16106 Swan Mountain Drive, Broomfield,
3 Colorado 80023.

4 Q. Mr. LaPorte, good morning, my name is
5 Mathew Berman, I'm counsel for Plaintiff,
6 Jennifer Fischman, in this action.

7 Today I will be asking you a series of
8 questions, which you'll be responding to having
9 sworn to tell the truth.

10 If you don't hear one of my questions, please
11 let me know. I'm potentially able move closer to
12 the microphone or to make it louder in some other
13 way to make myself more audible.

14 If you don't understand one of my questions,
15 please let me know and I'll do my best to
16 rephrase it a different way to make it more
17 understandable.

18 If you do answer my question, I'll take that
19 to mean that you understood my question.

20 It's important today, as you know, to give
21 verbal responses because we have a court reporter
22 present and she cannot take down gestures.

23 I will do my best to let you finish your
24 answer completely before I move on to a new
25 question and I would request that you also do

1 G. LaPorte - Confidential

2 your best to let me get my entire question out
3 even if it's clear to you what I'm going to be
4 asking you because we want to have a clear
5 transcript.

6 From time to time we may have objections from
7 one of the attorneys. Unless you're instructed
8 not to answer the question by one of the
9 attorneys, I will still expect you to provide a
10 response.

11 That being said, it's not my intention today
12 to ask you about any privileged communications
13 that you've had with counsel in connection with
14 matter.

15 Do you understand that you're under oath
16 today as if you're in a court of law even though
17 we're in an informal setting?

18 A. Yes, sir.

19 Q. Do you understand the other items that I
20 set forth already?

21 A. Yes, sir.

22 Q. Are you currently taking any medication
23 which could impact your ability to testify
24 truthfully or accurately today?

25 A. I am not.

1 G. LaPorte - Confidential

2 Q. Are you currently under any medical
3 condition which could affect your ability testify
4 truthfully and accurately today?

5 A. I am not.

6 Q. Do you suffer from my medical condition
7 which impairs your memory?

8 A. I do not.

9 Q. You've been deposed a number of times
10 before, correct?

11 A. Yes, sir.

12 Q. So I think you're used to the rules of
13 the road but if that's any questions that you
14 have about the procedure, please let me know and
15 I'll be happy to take a break.

16 From time to time you may wish to take a
17 break. If you wish to take a break at any time,
18 that's totally fine. I just request if there's a
19 question pending, you answer that question before
20 I move to take on any breaks.

21 I anticipate that we'll take breaks from time
22 to time apart from that and we'll just take it as
23 we go.

24 Did you conduct any preparation in connection
25 with today's testimony?

1 G. LaPorte - Confidential

2 A. I did.

3 Q. How much time did you spend preparing?

4 A. I don't know exactly but maybe about
5 three -- three to four hours.

6 Q. As part of your preparation, did you
7 have any interactions with counsel for the
8 Defendants in this matter?

9 A. Yes.

10 Q. Do you know how much time you spent
11 interacting with counsel for the Defendants in
12 order to prepare for today's deposition?

13 A. Once again, not exactly. I don't have
14 my records in front of me but maybe 30 minutes to
15 45 minutes.

16 Q. Okay. You spent other -- without
17 getting into the material that you discussed --
18 you have spent other time working with counsel in
19 connection with this matter, right?

20 A. With respect to preparation or prior
21 to -- prior to the notification that there was
22 going to be a deposition?

23 Q. Let me try to make my question more
24 clear.

25 What I'm trying to ascertain is how much of

1 G. LaPorte - Confidential

2 the time you have recorded for preparing for
3 today's deposition, just today's deposition, how
4 much of that time was spent working with other
5 counsel in this matter?

6 A. About 30 to 45 minutes. I'm trying to
7 think if there was -- if I spoke on the phone
8 previously. But I would say probably not much
9 more than an hour total, if there was another
10 time that I spoke on the phone.

11 Q. Setting aside your time with counsel --
12 I'm not asking about any of the subject matter
13 that you interacted with counsel -- but setting
14 that aside, what other preparation did you do in
15 connection with today's deposition?

16 A. I reviewed -- I reviewed my report and
17 then I also reviewed my file and all of my notes.
18 Also, I took a number of -- I captured number of
19 images like photographs, digital scans. So I
20 went overall of that a well, which I would
21 consider part of my file.

22 Q. That material that you have just
23 identified, is that contained within your report?

24 A. Some of it is in my report. But I would
25 say, you know, a good part of like my written

1 G. LaPorte - Confidential

2 notes -- I would say that everything in my report
3 or what's in my report is a fairly good summary
4 of all of my notes.

5 Q. You're testifying in this case as an
6 expert under the federal rules of civil
7 procedure, do you have a general understanding of
8 how that works?

9 A. Yes.

10 Q. So you're supposed to provide us in your
11 expert report with a number of items including
12 all of the facts upon which you relied to draw
13 your opinions and conclusions, do you understand
14 that?

15 A. Yes.

16 Q. So the material that you just described,
17 have you relied upon that in formulating your
18 opinions and conclusions in this matter?

19 A. I would say that -- like I said, I think
20 most of my materials that I reviewed or that I
21 just mentioned are incorporated into my report
22 and then I have a section in my report where I
23 discuss all of the testing and examinations that
24 I preformed and the reasons and bases for those.
25 So I would say that a lot of that, you know, sums

1 G. LaPorte - Confidential

2 up what's in my notes.

3 Q. So we're going to get to that
4 momentarily.

5 Do you have any opinions or conclusions with
6 respect to this matter that are not contained
7 within your report?

8 A. No.

9 MR. BERMAN: Toni, the first e-mail I
10 sent you, the large attachment, can we pull
11 it up on the screen, please.

12 Can everyone see this clearly on the
13 screen?

14 Q. Do you need us to shrink it down a
15 little?

16 A. I can see it just fine.

17 Q. Okay.

18 MR. BERMAN: Can we mark this please as
19 LaPorte Exhibit 1.

20 (LaPorte Exhibit 1, marked for
21 identification.)

22 Q. Mr. LaPorte, is there a preferred title
23 that you use; is it Mr. or doctor, what do you
24 prefer?

25 A. Whatever you prefer. You can call me --

1 G. LaPorte - Confidential

2 Q. What do you go by? What should I call
3 you today?

4 A. Jerry, Gerald, Mr. LaPorte.

5 Q. We'll go with Mr. LaPorte.

6 Mr. LaPorte, do you recognize this document
7 right?

8 A. I do, yes.

9 Q. This is the expert report you created in
10 this matter, correct?

11 A. It's the first page.

12 MR. BERMAN: Toni, can you please page
13 through the document to the witness'
14 satisfaction so he can satisfy himself this
15 is the report he prepared.

16 THE WITNESS: What would be best, I
17 think, if you can just go to the signature
18 page so I can see my signature at the end.

19 MR. BERMAN: Toni, can you please scroll
20 down to page 24.

21 THE WITNESS: Yes. To answer your
22 question, this is my report.

23 MR. BERMAN: Can we now turn to page
24 seven.

25 Q. Mr. LaPorte, this page at the top where

1 G. LaPorte - Confidential

2 it says "Summary of opinions" and continuing
3 through the next page.

4 Does this itemize your opinions and
5 conclusions with respect to this matter?

6 A. I believe so. I mean, I would say that
7 I usually -- I mean, my full opinions are in my
8 conclusions are at the opinion section at the
9 end. But, yeah, I think this is a good summary
10 of my opinions.

11 Q. Are there any other opinions not
12 contained in your report which you intend to
13 present at trial if you're called upon?

14 A. I don't believe so. Can I just read --
15 I don't need to read everything -- can I just
16 browse the subsections, the 20 (a), (b), (c) and
17 what's on the back?

18 Q. Absolutely. Please direct the court
19 reporter and let me know when you're done.

20 THE WITNESS: Can we go to the next
21 page?

22 I believe we may be missing something
23 that would be in the final page, which had
24 to do with the indentations of the two
25 entries on Bates-stamped 788.

1 G. LaPorte - Confidential

2 Q. Are you referring to something in your
3 conclusions that is not in the summary?

4 A. Yes, that's -- unless I missed it.

5 THE WITNESS: Can we go back up to (c)?
6 I apologize.

7 Yeah, if we go to the conclusion section
8 at the end I believe there's one point
9 missing.

10 MR. BERMAN: Toni, can you jump to page
11 23 or 24, please.

12 THE WITNESS: Yes, it would before
13 paragraph 46 and then (d) in here, the two
14 entries -- (d) beginning the two entries
15 reading "corp. (Plus Aldila Inc.) -- it's
16 number (d) in here, that's not in the
17 summary. So this is the idea that the two
18 entries from Q1 were executed over top of --
19 actually, I apologize but that Q8 is in
20 error, it should read Q12.

21 Q. So the Q8 bottom of page 23 should be
22 Q12?

23 A. Yes.

24 THE WITNESS: Can we go down to the
25 next -- can we split so we're looking at the

1 G. LaPorte - Confidential

2 bottom of page 23 and the top of page 24.

3 There we go.

4 Yes, so I do apologize, it was
5 typographic error. So Q8 should actually
6 read Q12.

7 Q. With that in mind, are all of the
8 opinions and conclusions that you intend to offer
9 at trial contained within this document?

10 A. Yes.

11 Q. Let's go back to page seven of the
12 report. Let's start with conclusion in 20(a).

13 In conclusion 20(a) you state that, "It is
14 highly probable that the handwritten entries on
15 both sides of Q8 were not executed on the
16 purported date of March 1, 2016," correct?

17 A. Correct.

18 Q. Now you got a footnote there citing to
19 the Scientific Working Group For Forensic
20 Document Examiners: Standard Terminology for
21 Expressing Conclusions of Forensic Document
22 Examiners. Do you see that footnote?

23 MR. BERMAN: Can you scroll down a
24 little bit, Toni, so he can see the
25 footnote.

1 G. LaPorte - Confidential

2 Q. By the way, if you happen to have a
3 physical copy of the report handy or on your
4 computer, I don't object to you reviewing it if
5 that's more expeditious for you, okay?

6 A. I do have a copy in front of me -- a
7 copy of my report in front of me so I can read
8 that.

9 Q. That's fine.

10 A. I'm trying not to sort of strain by
11 looking at the screen.

12 Q. I understand and that's totally fine.
13 I'm fine with that. But if you have any other
14 documents that you're referring to, I would need
15 to know that you're reviewing them.

16 A. Of course, yes. Of course.

17 Q. Do you have any other documents in front
18 of you other than your expert report?

19 A. I mean, I have my file but it's kind of
20 off to the side here.

21 Q. You're not presently referring to any
22 documents other than your expert report?

23 A. No, just my expert report is right in
24 front of me.

25 Q. If you wish to review something then

1 G. LaPorte - Confidential

2 please let me know and we can talk about that.
3 But otherwise if you're reading from a document
4 or reviewing a document, other than your expert
5 report, I need to know that.

6 A. Absolutely, of course.

7 Q. Thank you. So the footnote at the
8 bottom here; do you see that footnote, footnote
9 one?

10 A. Yes.

11 Q. So this citation that you got to the
12 Scientific Working Group Standard Terminology For
13 Expressing Conclusions, that's a terminological
14 guideline, correct?

15 A. It's a standard for terminology for
16 expressing conclusions.

17 Q. So that's informing the language used to
18 articulate an opinion or conclusion, correct?

19 A. As well as a definition of what those --
20 what that terminology means.

21 Q. Okay. But when you're using the phrase
22 "highly probable" here that's a terminology --
23 that's a use of terminology, it not an empirical
24 standard, correct?

25 MS. PRIMAVERA: Objection.

1 G. LaPorte - Confidential

2 A. It's a standard that's used by the
3 forensic document examiner community.

4 Q. But do you agree it's a standard for the
5 use of terminology?

6 MS. PRIMAVERA: Objection.

7 MS. GUERON: Objection.

8 A. It's standard for terminology for
9 expressing conclusions. There is another
10 standard that we have that's for other
11 terminology but this is terminology for
12 expressing conclusions.

13 Q. Okay. So when you use the term "highly
14 probable," you're using that as terminology to
15 express your view of evidence that is very
16 persuasive and where the examiner is virtually
17 certain but there is some factor that precludes
18 absolute certainty with respect to a conclusion,
19 right?

20 MS. COLWIN: Objection.

21 MS. PRIMAVERA: Objection.

22 MS. GUERON: Objection.

23 MR. BERMAN: Guys, if you want to
24 object, you can but maybe one of you can
25 give an objection rather than the three of

1 G. LaPorte - Confidential

2 you.

3 THE WITNESS: That's correct, that's the
4 definition in the footnote that I put in
5 there.

6 Q. That definition comes from that
7 Scientific Working Group, Forensic Document
8 Examiners terminology document, correct?

9 A. Just to be clear, the terminology for
10 expressing conclusions, yes.

11 Q. Okay. Now, you continue on in
12 subparagraph 20(a) and you state that you
13 performed a chemical analysis to measure the
14 amount of a volatile organic compound referred to
15 as T -- sorry, referred to as 2-phenoxyethanol
16 and in parenthesis you refer to that as 2-PE,
17 closed parenthesis.

18 A. Can I correct your pronunciation.

19 Q. Yes, please.

20 A. It's phenoxyethanol.

21 Q. Phenoxyethanol.

22 A. I'm happy to call it 2-PE from this
23 point forward -- for the court reporter also.

24 Q. Perfect. So we'll have an understanding
25 that when you use the term 2-PE, we're referring

1 G. LaPorte - Confidential

2 to 2-phenoxyethanol, good?

3 A. Yes.

4 Q. Okay. So it continues on here in your
5 summary of opinions to state "The level of 2-PE
6 stabilize over a period of approximately six to
7 eighteen months as an ink goes through a complex
8 drying process and is not significant much beyond
9 two years after the ink has been applied to
10 paper. However, the levels of 2-PE were
11 extremely high, along with other test results,
12 which are consistent with an ink that is still in
13 a very fresh stage, e.g., less than six months
14 old," right?

15 A. Correct.

16 Q. So what makes this a complex drying
17 process?

18 A. So the drawing process, which I
19 explained in my report in the reasons and bases
20 section, but to summarize that, when an ink is
21 placed on a piece of paper it goes through a
22 process where there is what we call crosslinking
23 in polymerization of the ink while the solvent
24 evaporates. And that process of drying, if you
25 will, is multiple factors. So as an analogy, you

1 G. LaPorte - Confidential

2 know, think about if you had a cut on your hand
3 and then a scar -- or then it starts to scab and
4 then potentially scars later. So there's a lot
5 of different interactions that are going on that
6 causes that cut to scab at some point in time.
7 And the same thing goes with ink.

8 So the best way to describe it too is
9 that what happens is the ink starts to harden and
10 then it incapsulates anything that is left in
11 the -- sort of the core of it, specifically in
12 this 2-PE compound.

13 Q. Did you use the term crosslinking of
14 polymerization?

15 A. Crosslinking and polymerization.

16 Q. When you use the term "crosslinking,"
17 what does that refer to?

18 A. It's kind of the molecular description
19 of what's happening with the ink.

20 Q. When you use the term "polymerization,"
21 what is that referring to?

22 A. Hardening from a chemical perspective.

23 Q. When you refer to the hardening of an
24 ink, are there different components in ink?

25 A. Yes.

1 G. LaPorte - Confidential

2 Q. And one of those components is the PE-2?

3 A. So 2-PE is one of potentially other
4 solvents or volatile organic compounds but also
5 there are resins in ink too. And so that process
6 with the resins in the volatile organic compounds
7 is what creates that drying process.

8 Q. So if we use the term VOC for volatile
9 organic compounds, does that make sense?

10 A. Yes.

11 Q. So within the ink there are different
12 components. You mentioned there could be VOCs
13 contained with the ink, there could be resins
14 contained with ink.

15 Are there any other types of components of
16 the ink?

17 A. There are certainly -- there are dyes
18 and pigments in inks. So to kind of summarize
19 that, the three main components of an ink are
20 colorants, which could be dyes and pigments,
21 solvents and then resins. But also there's other
22 trace type materials that can be in the ink that
23 may interact with that drawing process.

24 Q. Okay. So in the process that you
25 described in the ink hardening, is that due to

1 G. LaPorte - Confidential

2 evaporation leaving a higher amount or a higher
3 proportion of resin in what's left?

4 A. Not necessarily the resin but the
5 solvent.

6 Q. So the solvent itself hardens?

7 A. No, the solvent is part of -- it creates
8 -- is an activator for the hardening process.
9 The solvent is intended to -- I'll say help or
10 assist the liquid get applied to the paper when
11 it's wet and then once it's on the paper, the
12 idea is for that ink to dry so it stays on there
13 and doesn't come off. What will happen in that
14 process is the solvents will begin to evaporate
15 and then and all of those other complex
16 interactions, like the polymerization that --
17 that hardens -- that will cause the ink to
18 harden.

19 Q. Okay. And you state here that the level
20 of 2-PE stabilizes over a period of approximately
21 six to eighteen months as the ink goes through
22 that complex drying process, right?

23 A. Yes.

24 Q. Okay. So what determines whether it
25 takes six months or eighteen months or some other

1 G. LaPorte - Confidential

2 period of time to harden?

3 A. It could depend on the formulation of
4 the ink. So how the ink is formulated. What I
5 mean by that is all of the -- all the mixture --
6 the mixture of all of the ingredients that are
7 used in the ink. So not all ink formulations are
8 exactly the same.

9 There could be, you know, how the
10 document was stored. If it was stored in a high
11 heat environment and then it would dry much
12 faster.

13 Sometime it can depend on even the type
14 of paper. So very smooth surfaced paper --
15 technically we call it highly calendared paper so
16 it extremely smooth, thick, inks will dry -- you
17 know, they'll dry faster from those type of
18 materials because they don't absorb into the
19 paper.

20 Q. Okay. All right now you indicate here
21 that you performed a chemical analysis of the VOC
22 for document Q8; did I get that right?

23 A. That's correct.

24 Q. Did you perform any other analysis of
25 document Q8?

1 G. LaPorte - Confidential

2 A. Yes.

3 Q. How many other analyses did you perform
4 for document Q8?

5 A. I performed what I would call a
6 visual -- I refer to as a visual examination and
7 that's generally to identify the color of the
8 ink, sometimes determine the type of ink and then
9 a microscopic examination, that's to confirm the
10 type of ink that's been used.

11 Then there's a series of what we call
12 optical examinations using an instrument referred
13 to as Video Spectral Comparator or a VSC.

14 Then I do what's called Thin Layer
15 Chromatography Analysis or TLC to compare all of
16 the inks from the different documents.

17 And then that leads to the Gas
18 Chromatography Mass Spectrometry or GC/MS testing
19 for the solvents.

20 Q. So we got some new terms we introduced
21 into our discussion. Let's just have an
22 agreement if we refer to "VSC," that's the device
23 you used for your optical exam, is that okay?

24 A. Correct.

25 Q. If we refer to "TLC" that's your Thin

1 G. LaPorte - Confidential

2 Layer Chromatography, did I get that right?

3 A. Correct.

4 Q. And if you refer to GC/MS, that's Gas
5 Chromatography Mass Spectrometry, did I get that
6 right?

7 A. Yes.

8 Q. Are gas chromatography and mass
9 spectrometry one thing or are they multiple
10 things?

11 A. They're actually two different
12 technologies that work together in an integrated
13 way to provide different information about the
14 material being utilized.

15 Q. Okay. So we got for document Q8 a
16 visual examination, a microscopic examination, an
17 optical examination, a TLC examination and a
18 GC/MS examination; is that correct?

19 A. That's correct.

20 Q. Were there any other examinations
21 performed of document Q8?

22 A. I believe we did the physical
23 examination on Q8, which is referred to as
24 indentation or impression analysis and the
25 instrument that was used for that is called an

1 G. LaPorte - Confidential

2 Electrostatic Detection Apparatus, which we can
3 refer to as an ESDA, E-S-D-A.

4 Q. And then with respect to document Q12,
5 you summarize your opinions of that in paragraph
6 20(c); is that correct?

7 A. That is correct.

8 Q. What examinations did you perform on
9 document Q12?

10 A. I would say all of the same examinations
11 that I did for Q8.

12 Q. All right. Now can you tell me where
13 you identify your physical indentation
14 examination of document Q8 in your report?

15 A. Well, of course I describe it in
16 paragraphs 26 through 31. With respect to my
17 results, paragraph 44 and 45.

18 Q. Paragraph 44 doesn't seem to be
19 describing document Q8, am I misreading it?

20 A. No. So if I did -- if I did not observe
21 any impressions -- any significant impressions
22 then I don't report them up.

23 Q. Okay. Then there's no -- there's no
24 opinion or conclusion that you reached with
25 respect to document Q8 from your physical

1 G. LaPorte - Confidential

2 examination that's listed in your report?

3 A. With respect to the indented writing,
4 no, there is nothing.

5 Q. What about your visual examination of
6 document Q8, is that contained within your
7 report?

8 A. Yes.

9 Q. Where can I find that?

10 A. So that would be -- so the visual
11 examination often gets combined with the
12 microscopic examination but that would all be
13 summarized in table one, which falls under
14 paragraph 39, when I identify the color and the
15 type of ink.

16 And then also in paragraph 40, the
17 microscopic examination -- so once again that
18 physical examination and that microscopic
19 examination really gets combined to a certain
20 extent. I mean, I do it in that order
21 specifically, I examine the document physically
22 and then I look at it under the microscope more
23 to confirm what I've seen physically.

24 Q. So with respect to document Q8 in
25 paragraph 39 there doesn't seem to be any

1 G. LaPorte - Confidential

2 conclusion that pertains particularly to Q8,
3 right, I would have to look in the table below
4 that?

5 A. Yes, the table, which Q8 would be that
6 black -- you know, black ballpoint ink was used
7 for the text or written entries on both pages and
8 then a black non-ballpoint ink was used to write
9 in the date 3/1/16.

10 Q. In the right-hand column where it says
11 "writing ink formulation"?

12 A. Yes.

13 Q. And you got two different formulations
14 listed for document Q8, right?

15 A. Correct.

16 Q. So with respect to all entries except
17 the date, you've identified the writing ink
18 formulation as Ink 3 black, correct?

19 A. Correct.

20 Q. What is Ink 3 black?

21 A. So as I described I think in the
22 paragraph before, I do these -- I assign or
23 designate the ink just -- a number to indicate
24 that it is the same or different formulation from
25 the other inks.

1 G. LaPorte - Confidential

2 Q. Okay. And is that the same answer for
3 Ink 5 black?

4 A. Correct.

5 Q. So is there any significance to the fact
6 that this is Ink 3 black other than that Q12 also
7 contains Ink 3 black?

8 A. Well, the significance is that I'm just
9 identifying those ink formulations in terms of I
10 could not differentiate them based on the testing
11 that I performed.

12 Q. Can you explain what you mean when you
13 say you couldn't differentiate them, what does
14 that mean?

15 A. That means I couldn't differentiate them
16 base on all of the testing that I did.

17 Q. Does that mean Ink 3 on document Q8 is
18 the same as Ink 3 on Q12 or does it mean you
19 couldn't tell the difference or something
20 different?

21 A. Yeah, so we generally don't use the word
22 "the same." The same as in chemistry means
23 they're exactly the same in every aspect
24 whatsoever. So we use the term "matching," so
25 those formulations match each other, they

1 G. LaPorte - Confidential

2 couldn't be differentiated based on the physical,
3 the optical, the chemical examinations and the
4 chemical examinations included the TLC and GC/MS
5 testing.

6 Q. Okay. So I'm not sure that I understood
7 the distinction that you drew.

8 I think what I understood you to say is that
9 if we use the terminology that the inks are the
10 same, it means they have the same precise
11 chemical composition; did I get that part right?

12 A. Yes, can I just -- well, I'll provide an
13 example. I think that might clear this up. If
14 you were to buy two chocolate chip cookies -- two
15 different type of chocolate chip cookies, they'll
16 have chocolate chips; flour, sugar, butter,
17 right? So we can say that they're chocolate chip
18 cookies based on all those. But now one recipe
19 might call for two tablespoons of flour and the
20 other one might call for three tablespoons of
21 flour. So we can't feasibly look at the ratios
22 of all of the different chemicals that were used
23 so that's why we avoid using the term "same"
24 because "same" means exactly the same in every
25 aspect whatsoever. So that's why we use the term

1 G. LaPorte - Confidential

2 they're "matching" formulations.

3 Q. So what is it about them that matches?

4 A. The dye components, the solvents. All
5 of them based on the optical examinations using
6 the VSC. They have the same infrared
7 characteristics, they have the same ultraviolet
8 characteristics. They're, obviously, the same
9 color, they're the same type of ink. They have
10 the same dye components based on the TLC
11 examination.

12 Q. Okay. So with respect to the Ink 3
13 entry on document Q8, are you able to determine
14 what volatile organic compounds are contained
15 within that ink?

16 A. Based on my GC/MS analysis, they,
17 obviously, had the 2-phenoxyethol or the 2-PE
18 component.

19 Q. Are you able to tell whether there are
20 any other VOCs contained in the Ink 3 on document
21 Q8?

22 A. There -- so the GC/MS analysis that I
23 ran was very specific for 2-PE. And then there
24 are some -- potentially some other solvents that
25 will show within that range of analysis. But

1 G. LaPorte - Confidential

2 once again, I didn't find any differences between
3 those two inks.

4 Q. Did you identify which solvents were
5 present in Ink 3 on Q8?

6 A. No. I mean, my focus once I cannot
7 differentiate them, which is, by the way, we have
8 a standard for this, which is -- it's the
9 Scientific Working Group for Forensic Document
10 Examiners or SWGDOC, it's the standard for test
11 methods for forensic writing ink comparison,
12 which is included in my report.

13 So once we do a physical or visual
14 microscopic optical and TLC examination, if the
15 inks can't be differentiated at that point, the
16 standard allows us to say that they match each
17 other. But, obviously, to be clear, which is not
18 to use the word "the same".

19 Q. Okay. Do you know which resins were
20 contained in Ink 3 on Q8?

21 A. No, I didn't perform a resin analysis.

22 Q. Okay. Do you know which dyes or
23 pigments are contained within Ink 3 on document
24 Q8?

25 A. I can say that the same dyes in Ink 3 on

1 G. LaPorte - Confidential

2 Q8 and Q12 were the same based on the TLC.

3 Q. Do you know which trace materials were
4 present within Ink 3 on document Q8?

5 A. No, but once again when you add all of
6 those components together, when you take the
7 dyes, the solvents, the resins and the trace
8 materials, if there are differences, generally,
9 we would see that when we did the optical
10 examination in the infrared, so there might be
11 some different infrared characteristics if
12 something is different in those formulations.

13 So that examination the Video Spectral
14 Comparator or the VSC allows you to look at the
15 ink as a whole.

16 Q. Okay. Did you say that with respect to
17 document Q8 you combined your visual and
18 microscopic examinations?

19 A. Well, on Q8 and, you know, Q12 I did --
20 I performed the VSC examination and could not
21 differentiate the inks.

22 Q. I'm asking you something I think that's
23 a different. You identified five different
24 examinations, right.

25 A. Yes.

1 G. LaPorte - Confidential

2 Q. Physical, visual, microscopic, optical
3 and GC/MS, right?

4 A. Correct.

5 Q. So we've gone through so far your
6 physical indentation exam, your visual exam with
7 respect to document Q8.

8 Now I'm asking you paragraph 40 also contains
9 your microscopic exam, right?

10 A. Yes.

11 Q. And paragraph 40 contains your optical
12 exam?

13 A. Yes.

14 Q. And then your GC/MS exam and your TLC
15 exam for document Q8, are those listed in
16 paragraph 41 and 42?

17 A. So page -- paragraph 41 and 42, yes,
18 covers both Q8 and Q12. And also too we should
19 be clear that when we talk about the analysis of
20 Q8, the Q8 ink, we're just referring to the black
21 ballpoint Ink 3 and not the non-ballpoint ink
22 that was used for the date on Q8.

23 Q. You've identified that as Ink 5,
24 correct?

25 A. Correct.

1 G. LaPorte - Confidential

2 Q. So with respect to Ink 3, can you
3 identify what ink it is or is Ink 3 just a label
4 that you select, you know, so that you can
5 reference it in your report?

6 A. It's an arbitrary designation to be able
7 to differentiate the inks that I've analyzed. I
8 mean, I can tell you that the ink in all
9 likelihood is an ink that's been around for
10 several years that's manufactured by multiple
11 manufacturers including BIC and Paper Mate but I
12 didn't do a comparison to identify that ink
13 formulation. But based on my experience with
14 inks, it's a pretty common black ballpoint ink.

15 Q. When you say "in all likelihood," that's
16 conjecture?

17 A. I wouldn't say it's conjecture. It's
18 based on my knowledge, training and experience.
19 But I'm letting you know that I'm not -- I can't
20 confirm that because I didn't perform a direct
21 comparison with a BIC or Paper Mate ink.

22 Q. Okay. From your answer, can I take that
23 to mean that the document could have been written
24 by a BIC writing implement?

25 MS. GUERON: Objection.

1 G. LaPorte - Confidential

2 A. I wouldn't -- no, I would not
3 characterize this with a single manufacturer. So
4 like I said, there's multiple manufacturers that
5 would that would have this type of ink. It's
6 actually very simple from a formula perspective,
7 it always just a few dyes that are mixed
8 together. So I wouldn't call it a BIC ink, no.

9 Q. Have you completed your answer?

10 A. Yes.

11 Q. Let me clarify my question. My question
12 was, is it possible that this Ink 3 black came
13 from a BIC pen?

14 MS. PRIMAVERA: Objection.

15 A. Is it possible. But for reference
16 throughout, I would just call it Ink 3 without
17 a -- trying to identify it to a manufacturer. I
18 can't do that.

19 Q. I'm not asking you to identify the
20 manufacturer. I'm asking you whether it's within
21 the possible solution sense that this could have
22 come from a BIC writing implement?

23 A. It's possible.

24 Q. And could have also come from a Paper
25 Mate writing implement, correct?

1 G. LaPorte - Confidential

2 A. It's possible.

3 Q. And it could have come from any other
4 number of brands, correct?

5 A. Yes, that would be correct. So other
6 brands -- it's a very complicated -- it's a very
7 complicated relationship with ink companies.
8 Some of them will sell their ink to other
9 companies or they'll use them in pens that you
10 pick up in hotels and that sort of thing.

11 Q. Okay. Have you completed your
12 responsibility?

13 A. Yes, sir.

14 Q. With respect to the Ink 3 black on
15 document Q12, could that also have come from a
16 BIC pen?

17 A. Yes.

18 Q. Could it have come from a Paper Mate?

19 A. Yes.

20 Q. You testified that you were unable to
21 differentiate between the Ink 3 black on document
22 Q8 and Ink 3 black on document Q12, correct?

23 A. Correct.

24 Q. Is it possible that they could have been
25 written with two different brands of writing

1 G. LaPorte - Confidential

2 implements?

3 MS. PRIMAVERA: Objection.

4 A. It's possible. I can't identify the
5 brands that were used.

6 Q. To be clear, I'm not asking you to
7 identify the brands that are used. I'm asking
8 you about the potential solution space.

9 In other words, could document Q8 have been
10 written in a BIC and document Q12 been written in
11 a Paper Mate?

12 A. It's possible. But there's no evidence
13 really to suggest that. It's more likely that
14 they were written with a matching ink
15 formulation, that's all I can say at that point.

16 Q. My understanding from your testimony,
17 and please correct me if I'm wrong, you can have
18 a matching formulation that's used in multiple
19 brands, right?

20 A. It's possible, yes.

21 Q. You can tell me if it's chocolate chip
22 cookies, you can't tell me if it's Chips Ahoy or
23 an Oreo -- Oreo is a bad example, they don't make
24 chocolate chips but you get my point?

25 A. Yes.

1 G. LaPorte - Confidential

2 Q. So you use the term formulation, what
3 does that term mean?

4 A. It's the overall recipe.

5 Q. Okay. So your GC/MS examination of
6 document Q8 is contained in paragraphs 41 and 42,
7 right?

8 A. That's correct.

9 Q. I'm sorry, just to ask you one more
10 question about the formulation of ink. If you
11 can tell that the recipes are the same, does that
12 mean that they're chemically the same?

13 A. We don't use the word "the same." Once
14 again, in order for something to be the same you
15 would have to know all of the ratios, the exact
16 amounts that were used. So the best I can say is
17 that, you know, they generally have the same
18 ingredients. I would -- so let me caveat that
19 though -- if there are differences in certain
20 ratios, there is the possibility that you would
21 see those differences when you examine those inks
22 under the VSC when you look at them in the
23 infrared. So there's no evidence to indicate
24 that there are some major differences. But once
25 again, the standard does not allow us to say two

1 G. LaPorte - Confidential

2 inks are the same.

3 Q. I want to ask you a little bit more
4 about your chemical examination of document Q8.
5 I'm looking at paragraph 34 of your report and in
6 paragraph 34 you're describing the process of
7 chemical examination, correct?

8 A. Yes.

9 Q. So that's a general description of how
10 the examination works, right?

11 A. Correct.

12 Q. So in your discussion of the Thin Layer
13 Chromatography, TLC, you state that in order to
14 perform TLC on ink, the ink is extracted with a
15 solvent from the sample plugs removed from the
16 written entries; do you see where I'm reading?

17 A. Yes.

18 Q. Okay. So what solvent do you use to
19 extract the ink from the sample plugs?

20 A. So for TLC I use Pyridine,
21 P-Y-R-I-D-I-N-E. That's specifically for
22 ballpoint ink.

23 Q. When you when document here refers to
24 sample plugs, those are holes that you punch in
25 the document, correct?

1 G. LaPorte - Confidential

2 A. Yes, from the ink of course, from the
3 writing.

4 Q. From the portion of the document that
5 has writing on it, you extract a hole punched
6 sample?

7 A. Yes.

8 Q. With respect to document Q8, did you
9 follow this process?

10 A. Yes.

11 Q. So how many sample plugs did you remove
12 from document Q8?

13 A. I don't remember exactly but can I -- I
14 may have something in my notes. Can I refer to
15 that?

16 Q. Yes, you may.

17 A. So I don't -- I don't have it noted here
18 but I will tell you that it's typically three to
19 five hole punches. Never more than five. And
20 really never less than three unless I have a very
21 limited sample.

22 Q. I'm not sure -- I'm not sure I caught
23 all that because I was jotting down some notes.
24 I think you said typically you would use three to
25 five?

1 G. LaPorte - Confidential

2 A. Three to five.

3 Q. Never more than five?

4 A. Never more than five -- well, I hate to
5 use the word "never." I don't recall really ever
6 using more than five from a ballpoint ink unless
7 I really needed to. Sometimes there's other inks
8 that are a difficult to extract, which I may have
9 to do more than five but in this case that wasn't
10 -- that didn't apply here. So I would say three
11 to five.

12 Q. So with respect to document Q8, the ink
13 was not difficult to extract?

14 A. Correct.

15 Q. So that means you would have taken five
16 or fewer sample plugs?

17 A. Yes, I usually take five when I do
18 onsite inspection, which I did in this particular
19 case or I might take seven to have an extra but I
20 won't analyze more than five.

21 Q. Why do you prefer to use five?

22 A. I don't necessary prefer to use five, it
23 depends. I prefer to actually use three. Five
24 sometimes the ink -- depending on the ink and how
25 think it is on the paper can be too -- it can be

1 G. LaPorte - Confidential

2 too concentrated.

3 Q. Why does that matter?

4 A. Because when I -- when I perform the TLC
5 examination then the -- as you can see in figure
6 three that I have in my report sometimes those
7 spots will get too heavy and then it will be hard
8 to hard to compare the spots at each of the
9 different levels. It all starts to run together.

10 Q. So just for my understanding, the TLC
11 examination that you're describing in your report
12 involves a process that allows the ingredients of
13 the ink to separate so that you can look at them,
14 is that more or less correct?

15 A. The colorants.

16 Q. Colorants. This examination only
17 concerns the colorants portion of the ink?

18 A. Yes. But in some cases when I --
19 because I'll visualize the TLC on the VSC and
20 when you visualize it in the infrared sometimes
21 you will see other components that are not
22 necessarily the dyes.

23 Q. What did you do with respect to document
24 Q8 here?

25 A. Can you be more clear. What did I do?

1 G. LaPorte - Confidential

2 What do you mean what did I do?

3 Q. Well, I think you just testified that
4 sometimes you visualize and you can see other
5 components beyond the color, did I get that
6 right?

7 A. Not sometimes. I would say that almost
8 all the time I'm doing that. Rarely do I not do
9 that.

10 Q. Okay. So what did you do here with Q8?

11 A. Just like I said, which was I performed
12 the TLC examination, I took photographs of it and
13 then I examined it with the VSC.

14 Q. Okay. Were there colorants you were
15 able to discern for Q8?

16 A. Yes.

17 Q. Did you do the same analysis for Q12?

18 A. Yes.

19 Q. Did they match?

20 A. Yes, they were all done on the same --
21 sort of the same TLC plate like you see on figure
22 three.

23 Q. So in discussion of your inability to
24 differentiate the ink, you're incorporating in
25 that result your observations from the TLC

1 G. LaPorte - Confidential

2 examination, is that right?

3 A. Yes, it's everything combined.

4 Q. You can't tell me how many sample plugs
5 you took from document Q8, can you?

6 A. I said three to five. I can't give you
7 the precise number on whether it was three or
8 four or five but it was three to five.

9 Q. When you -- what's the next step --
10 after you take the sample plug, what's the next
11 step in the process of conducting your TLC
12 analysis?

13 A. So once I take the samples -- in this
14 particular case, I extracted the samples in New
15 York and then I had to bring them back with me.
16 But once I brought them back to the laboratory, I
17 then transfer them into a glass vial and then I
18 add a solvent.

19 Q. Did you complete your response?

20 A. Yes, I'll stop there.

21 Q. Okay. So when you take the three to
22 five sample plugs, do they go into the same vial?

23 A. I'm going to check my notes. I may have
24 -- yes, so the samples that I remove -- yes, they
25 all go in the same vial. Yes.

1 G. LaPorte - Confidential

2 Q. Okay. So when you conduct your TLC
3 examination, is it one examination of the
4 three -- of the vial of combined sample plugs?

5 A. Yes.

6 Q. So what's the purpose of taking more
7 than one sample plug?

8 A. Because it might not be concentrated
9 enough. I need to be able to see those
10 components, like in figure three. If I only take
11 one plug I may not be able to see all of those
12 components. The idea is I want to get the right
13 concentration, if you will, where it's not too
14 concentrated and not under concentrated.

15 Q. What determines the amount of
16 concentrate in a sample?

17 A. It depends on how thick the ink is on
18 the paper. It can also depend on the ink
19 formulation specifically. Some inks will not
20 extract in a concentrated way or they'll
21 overly -- they'll be overly concentrated.

22 Q. Is there some scientific standard that
23 you reference which tells you how many samples to
24 take?

25 MS. PRIMAVERA: Objection.

1 G. LaPorte - Confidential

2 A. Well, as I already said, there's the
3 SWGDOC standard for writing ink comparisons but
4 that standard doesn't specify exactly the number
5 for the reasons that I just mentioned. Sometimes
6 you don't know until you start extracting and
7 then -- but that -- but you can adjust that by
8 how much sample you take for the spot you're
9 going to put on the TLC plate. So if it comes
10 out really dark then I have to -- typically I'll
11 draw, you know, two microliters into a pipette
12 and then I can adjust that depending on how
13 concentrated the ink looks once it's in this
14 solution. So sometimes I'll just draw one
15 microliter, sometimes 1.5 or sometimes it will be
16 two.

17 Q. Have you completed your response?

18 A. Yes, sir.

19 Q. Is that process you just described part
20 of the standard for test methods for forensic
21 writing ink comparison that you referenced on
22 page 14 of your report?

23 A. I would actually say that goes back to
24 basic chemistry -- college chemistry when you do
25 TLC analysis.

1 G. LaPorte - Confidential

2 Q. So is TLC analysis part of an
3 undergraduate or graduate chemistry curriculum?

4 A. Yes, absolutely.

5 Q. Is the use of Pyridine part of any
6 generally accepted scientific standard?

7 A. Pyridine is mentioned I believe in the
8 SWGDOC standard.

9 Q. Is SWGDOC separate from the standard for
10 test methods for forensic writing ink comparison?

11 A. SWGDOC stands for the Scientific Working
12 Group for Forensic Document Examiners, that's the
13 group published the standard.

14 Q. When you say "the standard," are you
15 referring to the standard for test methods for
16 forensic writing ink comparison?

17 A. Yes.

18 Q. So SWGDOC is the organization and
19 standard for test methods for forensic writing
20 inc comparison is a standard promulgated by that
21 group?

22 A. Well, you're going into a rabbit hole.
23 So I will say that the SWGDOC -- originally
24 SWGDOC was a group that was funded under the
25 department of just and the FBI. I was part of

1 G. LaPorte - Confidential

2 that group, I was the technical representative
3 for the ink standards. But we then published the
4 standards through ASTM and we did that for many
5 year. And then ASTM turned over the rights to
6 those standards back to SWGDOC, which are
7 published on the website. So they are SWGDOC
8 endorsed standards but have been published
9 through ASTM. ASTM is a Standards Development
10 Organization or an SDO.

11 Q. Is ASTM an acronym?

12 A. Yes, it's the -- ASTM international, is
13 the Association For Standards, Testing and
14 Materials. But the ASTM actually just become
15 ASTM.

16 Q. So the name of the entity has changed?

17 A. Well, it's just ASTM now. Historically,
18 yes, it was it was an acronym. It's almost used
19 as a term now, ASTM, or the name of the
20 organization.

21 Q. Are all of the examinations that you
22 performed pursuant to the SWGDOC, slash, ASTM
23 standards?

24 A. Well, as I highlighted in my report.
25 Certainly for the -- you know, for the ink

1 G. LaPorte - Confidential

2 comparisons, for the indentations, we do have
3 SWGDOC standards for those, yes.

4 Q. Do those standards also govern your
5 GC/MS testing?

6 A. It does not. There is not a standard
7 that was published through ASTM for the GC/MS
8 analysis.

9 Q. Is there a standard published through
10 any other entity for the GC/MS analysis?

11 A. There are multiple standards for GC/MS
12 analysis but not for inks.

13 Q. Is the GC/MS analysis used for analysis
14 of things other than inks?

15 A. Yes.

16 Q. Can you give me any examples?

17 A. Explosives, drugs, miscellaneous
18 materials, unknown materials, pharmaceuticals.

19 Q. Okay.

20 A. Probably I would say it's the most
21 utilized instrumental analytical procedure in the
22 world for chemical analysis.

23 Q. So did I correctly understand your
24 answer that SWGDOC and ASTM do not have a
25 promulgated standard for the use of GC/MS testing

1 G. LaPorte - Confidential

2 for inks?

3 A. Correct.

4 Q. Okay.

5 A. There's multiple publications but not a
6 standard for this.

7 Q. There's multiple what?

8 A. Publications -- peer reviewed
9 publications.

10 Q. Is there any other -- well, you
11 described an SDO, Standards Development
12 Organization, is that what it stands for?

13 A. Yes.

14 Q. Is there any other SDO that promulgates
15 the standards for the use of GC/MS testing of
16 inks?

17 A. No.

18 Q. Is SWGDOC also considered an SDO?

19 A. No.

20 Q. What's the difference between those two
21 entity types?

22 A. So an SDO is an organization that
23 promulgates standards through a process --
24 through a regulatory process, if you will. And
25 SWGDOC was the group where we drafted the

1 G. LaPorte - Confidential

2 standards and then we submitted them to the SDO.

3 So SWGDOC is really a composition of expert.

4 Q. So if we use like a unit of measurement,
5 like a meter, right, there's some entity that
6 defines what a meter is, right?

7 A. Correct.

8 Q. And is that basically the same thing
9 that ASTM is doing?

10 MS. PRIMAVERA: Objection.

11 A. You're asking questions that sort of
12 require an immense amount of background that's
13 not that simple to answer. But the meter -- what
14 happened is that there would probably -- there's
15 scientific research and ways to identify exactly
16 what a meter is and that goes through all
17 kinds -- all types of processes and then at some
18 point in time you would use an SDO to put forth
19 all of that information and write a standard of
20 what a meter is and then the SDO goes through a
21 long process of open public comments and then and
22 then people vote on that standard and if it's --
23 if it passes a certain majority then it becomes a
24 standard. But an SDO does not necessarily write
25 its own standards, if that makes sense.

1 G. LaPorte - Confidential

2 Q. Okay. So I'm understanding from your
3 answer that the SDO is the organization that
4 decides upon the standard but it can decide to
5 use the standard offered through some
6 third-party; is that correct?

7 A. No, the SDO -- the SDO's purpose isn't
8 to decide whether to use the standard. They --
9 based on a voting process, they decide whether
10 the standard should be published. Once it's
11 published, you -- they're not mandatory -- in
12 most industries it's not mandatory that you have
13 to use the standard.

14 Q. So the SDO publishes a standard but it
15 doesn't necessarily publish a standard that it
16 created. It could be publishing a standard
17 created by some third-party, did I get that
18 right?

19 A. Correct.

20 Q. Using the same framework, SWGDOC drafted
21 the standard, provided it to ASTM and ASTM
22 through the process you described elected to
23 publish it, is that right?

24 A. Correct.

25 Q. Is there any such framework applicable

1 G. LaPorte - Confidential

2 to the GC/MS examination of ink?

3 A. No, not for -- not through an SDO.

4 There are standards for ink analysis that are in
5 the published literature but not that have gone
6 through an SDO.

7 Q. So when you say there are standards,
8 you're referring to a body of peer reviewed work
9 that have been published in the various
10 publication, is that right?

11 A. Correct.

12 Q. All right. So with respect to the GC/MS
13 analysis that you're describing in paragraph 35
14 and 36 and 37 and 38, you're looking at the rate
15 of evaporation of 2-PE, correct?

16 A. That's over -- that's over simplified
17 but yes.

18 Q. Are there any other examinations that
19 were performed using GC/MS of the document Q8
20 other than with respect to the 2-PE content?

21 A. There are certainly quality control
22 samples that I analyzed using the GC/MS.

23 Q. Okay. So with respect to your TLC
24 examination, you described the process of taking
25 sample plugs, putting them in vials, developing

1 G. LaPorte - Confidential

2 them on a plate with a mixture of solvents and
3 then applying the SWGDOC standards.

4 Now with respect to the GC/MS, how can we how
5 can we identify the process that you used to
6 conduct the examination?

7 A. I'm not sure what you mean by "identify
8 the process"?

9 Q. Well, does your report describe the
10 process that you used to conduct your GC/MS
11 analysis?

12 A. Yes.

13 Q. So where can I find that in the report?

14 A. That should be throughout -- I mean,
15 section D.

16 Q. Section D you said?

17 A. Yes. Paragraphs 35, 36, 37, and 38.

18 Q. So those are the paragraphs I just
19 referenced?

20 A. Yes.

21 Q. So starting with paragraph 36, you're
22 describing what the examination is looking at,
23 right?

24 A. (No verbal response.)

25 Q. Let me try it a different way. Your

1 G. LaPorte - Confidential

2 paragraphs 36, 37 -- sorry, 35, 36, 37 and 38 are
3 generally describing what a GC/MS examination is
4 and does, correct?

5 A. No, because there is a discussion about
6 how the solvent evaporates from the paper -- from
7 the ink when it's applied to the paper. I talk
8 about the method that's used where you take plugs
9 at 70 degrees Celsius, you measure the difference
10 between the unheated and heated samples so
11 there's a methodology that's described in there.

12 Q. So how can I tell from reviewing your
13 report what you did with document Q8 with respect
14 to the GC/MS analysis?

15 A. Everything that's in those paragraphs is
16 what I did to Q8.

17 Q. Well, for example, right, in order to
18 conduct your GC/MS examination do you take
19 samples of the document?

20 A. Yes.

21 Q. Is that described in here?

22 A. That's described in -- I believe, in
23 paragraph 33. So just to read the last sentence
24 of paragraph 33, "In order to conduct both TLC
25 and GC/MS, I removed paper and ink plugs from

1 G. LaPorte - Confidential

2 representative areas of the written entries with
3 a specialized hypodermic like device."

4 Q. Okay. Have you completed your response?

5 A. Yes.

6 Q. Okay. So did you use -- did you remove
7 paper and ink plugs from document Q8 to conduct
8 the GC/MS examination?

9 A. Yes.

10 Q. Does your report describe you doing
11 that?

12 A. The reasons and bases section talks
13 about how that's done and then later on I say in
14 my observations and results from testing section
15 that I performed a GC/MS analysis, which applies
16 to the GC/MS analysis that I described
17 previously.

18 Q. Does your report tell me how many plugs
19 you took from document Q8 to perform your
20 GC/MS analysis?

21 A. No, that's all in my notes.

22 Q. Does your report tell me whether your
23 plugs were half a millimeter or one millimeter or
24 something in between?

25 A. They were 0.5 millimeters, that's in my

1 G. LaPorte - Confidential

2 notes.

3 Q. But that's not in your report, right?

4 A. That's in my notes.

5 Q. Does your report tell me how many plugs
6 you took for the GC/MS analysis?

7 A. It's in my notes, it's not in my report.

8 Q. How many plugs did you take from
9 document Q8 to perform your GC/MS analysis?

10 A. Four.

11 Q. Why did you use the number four?

12 A. I typically use three to five but
13 it's -- but I also performed duplicate testing.
14 So in order to minimize the amount of samples
15 that I take, sometimes depending on how much
16 write is present, then I'll change that from
17 three to five. But at the end of the day it
18 doesn't really matter because as I described in
19 my report, I'm going to look at the relative
20 difference between the samples that have been
21 unheated or not treated and then the samples that
22 have been heated. So the important part is just
23 I use the same amount of samples for both.

24 Q. Well, what I'm trying to find out is if
25 I wanted to replicate your process from your

1 G. LaPorte - Confidential

2 report whether I can do that.

3 So you mentioned that you use typically three
4 to five plugs; is that correct?

5 A. Correct.

6 Q. What determines whether you use three,
7 four or five or some other number?

8 A. It depends on the amount of ink that's
9 present. If I'm going -- you know, how many
10 times -- I have to duplicate the testing so it's
11 four times two, which would be eight and then I
12 have to use that for the unheated and then I need
13 eight more for the heated so that's sixteen hole
14 punches that I'm taking.

15 Q. Can you walk me through that process
16 that you just described and explain to me, for
17 example, what's the difference between your
18 testing and your duplicate testing?

19 A. I'm doing the testing twice.

20 Q. Okay. So just walk me through step by
21 step what you do with taking plugs and using the
22 plugs, can you do that, please?

23 A. Yes.

24 Q. Okay.

25 A. So I remove the 0.5 millimeter hole

1 G. LaPorte - Confidential

2 punches for GC/MS testing. In this particular

3 case I removed four or really it's eight that I'm

4 taking but I divide those up between -- and put

5 those into two vials. So I take four hole

6 punches and place that into a vial. I take

7 another four hole punches that are in the very

8 near vicinity of where I took the first four hole

9 punches and I put that in a second vial. One of

10 those vials then I just -- I perform the testing

11 for the 2-PE, the GC/MS analysis, I get a value

12 for the quantity of 2-PE and then the other vial

13 I heat those hole punches at 70 degree Celsius

14 for 90 minutes and then I measure the amount of

15 2-phenoxyethanol in the heated samples. And the

16 idea based on lots of research -- years of

17 research is that if the ink is fresh then you

18 will drive off a lot of phenoxyethanol when you

19 heat it. If it's not fresh, if it's old, then

20 you're not going to drive off very much

21 phenoxyethanol because it will be completely dry.

22 The term that I use "a lot" is 25 percent, which

23 is the threshold that we use to say with a high

24 degree of probability that an ink is less than

25 two years old when those values exceed

1 G. LaPorte - Confidential

2 25 percent.

3 Q. Have you completed your response?

4 A. Yes.

5 Q. So with respect to the number of plugs
6 you took for your GC/MS analysis of document Q8,
7 did you take eight plugs or did you take four
8 plugs?

9 A. I did -- I actually did sixteen. So I
10 did four unheated, four heated and then I
11 repeated that again and did four unheated, four
12 heated.

13 Q. Let me just see if I'm keeping up with
14 the steps.

15 Step one you took sixteen plugs from document
16 Q8, did I get that right?

17 A. Correct.

18 Q. Then you took four of those plugs and
19 you put them in a vial; is that correct?

20 A. Correct.

21 Q. And you took four other plugs and put
22 them in a second vial?

23 A. Correct.

24 Q. You heated the first vial at 70 degrees
25 for 90 minutes; is that correct?

1 G. LaPorte - Confidential

2 A. Correct.

3 Q. You did not heat the second vial?

4 A. Correct.

5 Q. Do you somehow measure vial number one
6 after it's been heated?

7 A. I do a relative measurement of the --
8 when I compare the heated and the unheated and in
9 order to do that I use something called an
10 internal standard.

11 Q. You're going to compare two different
12 vials; a heated and unheated, correct?

13 A. Yes.

14 Q. Do you have to take measurements of each
15 of those two vials?

16 A. Not when I'm doing a relative
17 comparison. If I have two people standing next
18 to each other and one is 6'1 and the other is 5'8
19 and you can ask me who is taller, I can take a
20 ruler and measure a difference in their height.
21 I don't have to measure one and say, oh, he's 5'8
22 and measure the other and say he's 6'1. I can
23 just say there's a -- you know, a five inch
24 difference.

25 Q. Okay. Let's stick with your analogy

1 G. LaPorte - Confidential

2 that you just used. In your analogy you used a
3 ruler as your measuring tool, right?

4 A. Correct.

5 Q. In taking your relative measurement of
6 the two vials, do you have a measurement tool?

7 A. It's called the internal standard.

8 Q. What is the internal standard that you
9 just referenced?

10 A. The internal standard is another
11 chemical that's put in with the extraction
12 solvent and it's called o-cresol. I put the
13 cresol in the extraction solvent or in a mixture,
14 if you will, and I use that to extract the ink
15 from both the samples.

16 And then there's -- then I do -- then
17 there's calculations where the cresol -- you get
18 more of -- I guess the best way to put it is a
19 corrected value because the cresol acts as a
20 measurement tool and a ruler in both of those
21 sets of samples. So that allows you more
22 precision when you're doing the relative
23 comparison.

24 Q. Okay. I want to see if I understand
25 this conceptionally. Let -- I'll paraphrase back

1 G. LaPorte - Confidential

2 to you and let me know if I got it right or if
3 I'm off with something, okay.

4 You got the two vials; first vial is heated
5 the second vial is unheated; is that correct?

6 A. Correct.

7 Q. And then do you add this o-cresol to
8 each of those two vials?

9 A. I add o-cresol and acetonitrile.
10 O-cresol is the internal standard, acetonitrile
11 is the solvent. So it's a combination of
12 acetonitrile and o-cresol. The acetonitrile acts
13 as the primary extractor, the one that pulls the
14 ink from the paper and puts the 2-PE into a
15 liquid solution.

16 Q. Did I get the term right, acetonitrile?

17 A. Correct.

18 Q. And o-cresol?

19 A. Yes.

20 Q. So do I understand correctly that with
21 respect to the heated vial, you're adding
22 acetonitrile and o-cresol into that vial?

23 A. Correct, for five minutes.

24 Q. With respect to the unheated vial, do
25 you add acetonitrile and o-cresol?

1 G. LaPorte - Confidential

2 A. I use the exact same solution so that
3 the ratio of acetonitrile an o-cresol is the same
4 in both, yes.

5 Q. So then after you've added the
6 acetonitrile and o-cresol to vial number one and
7 the five minutes elapsed, what do you do with the
8 vial?

9 A. Now I then remove the liquid ink, I
10 remove 10 microliters from that vial and I put
11 that into another vial.

12 Q. So --

13 A. And that's the vial that would be used
14 for the GC/MS analysis.

15 Q. Let's keep breaking it up into, pieces.
16 Vial number one you add those two components to
17 it for five minutes, you wait. Then you remove
18 10 microliters of the substance that's in the
19 heated vial, correct?

20 A. Correct.

21 Q. It's mixed together or is it separated
22 somehow within the liquid?

23 A. Yes, so I think this is the issue we run
24 into when -- I'm not complaining here but you're
25 asking questions so out of order. But if -- if I

1 G. LaPorte - Confidential

2 was explaining this to somebody from the
3 beginning I would use an analogy of think about
4 it if you got ink on your shirt and you tried
5 water and you tried to brush it off, it smudges
6 or nail polish remover. Really what extraction
7 is it turns the ink -- the hard ink into a
8 liquid. That's the whole idea of an extraction.

9 So, yes, when I put the acetonitrile and
10 the o-cresol together that is my -- the
11 acetonitrile is my extraction solvent. The
12 o-cresol is the measurement tool or if you will
13 the ruler that's going to be used in there --
14 that we're going to correct for when everything
15 is done.

16 So, yes, ten microliters of the
17 acetonitrile plus the o-cresol is removed so that
18 I'm not taking the paper plugs because when I --
19 if I let the plugs sit in the solution, right,
20 then they're going to continue -- they can
21 potentially continue to extract. So I remove
22 just the liquid out and put that into another
23 vial and then that goes into the GC/MS.

24 Q. Have you completed your response?

25 A. Yes.

1 G. LaPorte - Confidential

2 Q. Okay. So let's rewind it a little bit.
3 You got vial number one with the four plugs in
4 it. You add the acetonitrile and the o-cresol,
5 you let it rest for five minutes; is that
6 correct?

7 A. I agitate it for five minutes too so
8 it's not just rest. I stir it up.

9 Q. Okay. It's agitated for five minutes,
10 do you have some kind of machine that shakes it
11 or something?

12 A. I don't agitate it for the whole five
13 minutes, I tap it probably -- I don't know, 30
14 seconds at least just to mix it up. And then,
15 yes, sometimes I -- what I do have is a vortex --
16 it's called a vortex and I put it on the vortex
17 and that actually shakes it. I do that for -- I
18 don't know, ten seconds or so and then I let it
19 sit. I continue to shake it up and then when I
20 remove the ink that's been extracted, I put it in
21 a syringe but I also mix it up with the syringe
22 too.

23 Q. Let's rewind that again. So you got the
24 vial with the four plugs in it, you add the
25 acetonitrile, you add the o-cresol. Some period

1 G. LaPorte - Confidential

2 of time elapses and then it gets agitated, is
3 that right?

4 A. It's being agitated in the interim, yes,
5 for over that course of five minutes.

6 Q. Well, is it being continuously agitated
7 for the entire five minutes?

8 A. Like I said, I'll tap it, I'll shake it,
9 I'll vortex it but then I'll also -- once the
10 five minutes starts -- I think -- I would say
11 typically when I'm about four minutes and
12 45 seconds then I'll start agitating it with the
13 syringe, sucking it up, pushing it out, just to
14 make sure it's all mixed completely.

15 Q. Are you describing to me a process that
16 you're engaging in manually?

17 A. That part is manual, yes. It's called
18 extraction. That's a manual process, yes.

19 Q. But the vortex piece of it, is that also
20 manual?

21 A. It's a sample prep. It's a little --
22 it's a little instrument that I have that
23 shakes -- it shakes when you push down on it so I
24 put the vial on there and it shakes it.

25 Q. Is it being continuously shaken by the

1 G. LaPorte - Confidential

2 vortex?

3 A. No, that's about ten seconds. I'm just
4 agitating it -- just trying to mix it up. I
5 don't have to -- it's not necessary to shake it
6 for five minutes.

7 Q. So when you put it on the vortex and you
8 depress the vortex, it shakes it for ten seconds?

9 A. Approximately, yes.

10 Q. How many times do you do that?

11 A. Once.

12 Q. So you do that for the heated sample.
13 You do the same process for the unheated sample,
14 correct?

15 A. Correct.

16 Q. So at the conclusion of this process of
17 five minutes with the agitation at intermittent
18 periods manually and through the vortex, what do
19 you end up with after the five minutes?

20 A. Then I end up with a liquid solution of
21 ink, acetonitrile and o-cresol.

22 Q. And is that solution uniform or does it
23 separate according to density in the vial?

24 A. No, it's uniform. That's the purpose of
25 using acetonitrile.

1 G. LaPorte - Confidential

2 Q. So it's a uniform solution?

3 A. Yes.

4 Q. You extract 10 microliters of that
5 uniform solution?

6 A. Correct.

7 Q. And you place that in a new vial?

8 A. Yes.

9 Q. What do you do with the new vial?

10 A. The new vial goes on to what's called
11 the GC portion of the GC/MS and it has what's
12 called an auto sampler. And the auto sampler has
13 a hypodermic needle in it that punches through
14 the vial and then draws one microliter of that
15 liquid solution and then it injects it into the
16 GC, which travels through that and then over to
17 the MS.

18 Q. Okay. So let me see if I understand
19 what happens with the new vial.

20 The new vial starts to ten microliters of the
21 uniform solution of the ink, the acetonitrile and
22 the o-cresol, is that correct?

23 A. Acetonitrile.

24 Q. Acetonitrile. Sorry. So that's where
25 we start out with, right?

1 G. LaPorte - Confidential

2 A. Correct.

3 Q. And then you use a device called an auto
4 sampler to punch through the vial and to pull out
5 one of those ten microliters?

6 A. That's close. But, yes, the auto
7 sampler has a hypodermic needle that's built into
8 a robotic arm and that hypodermic needle injects
9 into the new vial. The vial is very specialized,
10 it has a top on it, almost like a rubberized
11 center so that the needle can go through it. And
12 that needle goes through the vial, pics up one
13 microliter and then the one microliter is
14 injected into the GC/MS, and that's all robotic.

15 Q. So you start with ten microliters and
16 the robotic device extracts one of those ten
17 microliters and puts it into the GC device?

18 A. Once again, we're kind of going into a
19 rabbit hole. So the way that I have my GC/MS
20 programmed is that it -- what it will do is it
21 will make the hypodermic needle go in there and
22 it will drop one microliter and then it will dump
23 one microliter into a waste vial and that does
24 that twice. And it's more of sort of a cleaning
25 process to make sure everything is picked up

1 G. LaPorte - Confidential

2 correctly and then on the third time it draws
3 another microliter and it injects directly into
4 the GC/MS.

5 Q. Let's back this up again. You start
6 with a new vial with ten microliters of the
7 uniform solution of acetonitrile, o-cresol and
8 ink, right?

9 A. Correct.

10 Q. Then your auto sampler uses its robotic
11 arm to extract one of those ten microliters; is
12 that correct?

13 A. Correct.

14 Q. And then one drop of the one microliters
15 is placed into some other receptacle?

16 A. The one microliter sample that the
17 plunger -- once the hypodermic needle plunges in,
18 pulls up one microliter, it then moves over
19 robotically to a waste vial and dumps that. And
20 then it goes to another vial where it cleans
21 again with an acetonitrile solution that's in the
22 robotic arm and then it goes back into the vial,
23 does one microliter again, goes back to the waste
24 and then goes through the cleaning process and
25 then comes to what we call the ana-link sample,

1 G. LaPorte - Confidential

2 the sample that's going to be analyzed, then
3 takes that one microliter and it injects it in
4 the GC/MS. This is all preprogrammed and this
5 all based on the scientific literature and it
6 goes back to sort of a lot of basics about GC/MS.
7 I've been a GC/MS chemist for -- I've been using
8 GC/MS since 1993, a long time. I was drug
9 chemist for many years and used GC/MS thousands
10 of times. This is kind of a standardized method
11 that's used by GC/MS.

12 Q. Have you complete your response?

13 A. Yes.

14 Q. So let me rewind and see if I'm
15 following you. Your ten microliters gets
16 extracted by the auto samplers robotic arm, it
17 extracts one microliter. It's programmed to
18 process that one microliter by adding more
19 acetonitrile to it and placing it into the first
20 of multiple empty clean vials, is that right?

21 A. There's two -- no, so there's one dirty
22 vial, one waste vial and two cleans that have --
23 and the two cleans have clean acetonitrile in
24 them.

25 Q. So when the uniform solution is

1 G. LaPorte - Confidential

2 traveling through the GC robotic components, it's
3 placed first into a waste vial?

4 A. There's a tray -- it's an auto sampler
5 tray -- it's a robotic tray, it all moves
6 automatically. On one end of the tray is a waste
7 vial and then there's two clean vials. When I
8 say "clean vials," those vials contain a clean
9 acetonitrile, just acetonitrile. So what will
10 happen is now when I put the vial that's going to
11 be analyzed, it goes -- into goes into the tray,
12 the tray moves over under the robotic arm, the
13 syringe dips into that, takes one microliter,
14 then the arm moves back over and disburses the
15 one microliter into the dirty vial or the waste
16 vial.

17 Now, that -- the robotic arm goes to the
18 clean vial with the acetonitrile, it pumps and
19 then it then it dumps the clean acetonitrile back
20 into the waste vial, then goes back over to the
21 vial again and does that twice. And then on the
22 third time it goes back to the vial, takes the
23 one microliter and then that's the one microliter
24 that gets into the injected into the GC/MS.

25 Q. Let me rewind this and see if I'm

1 G. LaPorte - Confidential

2 following. You have the heated vial, you add the
3 acetonitrile and o-cresol to the heated vial, it
4 agitates, goes through the five minute period you
5 described. After that concluded, the auto
6 sampler will withdraw ten microliters of the
7 uniform solution, it will --

8 A. No, no. I have to stop you there.

9 Q. Sure.

10 A. The auto sampler doesn't withdraw ten
11 microliters, it's programmed to withdraw one
12 microliter. So the manual -- the -- as we call
13 it, the sample prep -- the sample extraction
14 procedure, I use a hypodermic needle that's
15 accurate to .005 microliters. So I withdraw ten
16 microliters and then I put that in the vial
17 that's then going to go on to the GC/MS.

18 Q. That vial gets put onto the tray
19 underneath the GC/MS machine, is that right?

20 A. Over top the GC/MS, not under.

21 Q. So it goes on the top and underneath are
22 multiple vials; one waste vial and two clean
23 vials?

24 A. Correct.

25 Q. So the one microliter that's on the top

1 G. LaPorte - Confidential

2 of the GC/MS is going to go through the GC/MS
3 machine, is that right?

4 A. Well, yes, one microliter from the
5 analysis vial -- call it that -- because that's
6 the vial that contains the liquid ink that's
7 going to be analyzed. One microliter is going
8 into the machine.

9 Q. Okay. I'm trying to keep track of the
10 microliters. You're starting with ten in a vial?

11 A. Correct.

12 Q. Only one of those ten microliters goes
13 onto the top of the GC/MS machine; is that
14 correct?

15 A. Correct.

16 Q. Okay. So that one microliter that's on
17 the top of the GC/MS machine is going to go
18 through three different processes through the
19 GC/MS machine; is that correct?

20 A. No, no, no. So the ten microliters goes
21 through three different processes.

22 Q. Okay.

23 A. One is removed, then cleaned, it goes
24 back; another is removed -- call it -- we're at
25 microliter two now, it's cleaned, then it goes

1 G. LaPorte - Confidential

2 back; and then now it pulls up the third of the
3 ten microliters and then injects that into the
4 GC/MS.

5 Q. What's the purpose of taking microliter
6 number one and running it through the GC/MS?

7 A. It's to make sure that the hypodermic
8 needles doesn't have any air bubbles in it. If
9 you ever go for a shot and you see the doctor
10 flicking it, the idea is so you don't have any
11 air so you can get a more precise measurement.
12 Also too the reason it's doing that is because
13 once it pulls up it, it needs to rinse that to
14 make sure all of that ink material -- that ink
15 liquid that was removed, that's it's clean. The
16 needle every time wants to make sure it's clean
17 before it goes into the ana-like vial. That
18 cleaning process is actually pretty extensive too
19 because that happens a few times. It's all
20 automated once you get -- the whole idea is to
21 make sure that that arm -- because the arm is
22 pulling up the syringe and it wants to make sure
23 it's not -- it doesn't have any air in it.

24 Q. So microliter number one is for the
25 purpose of cleaning the hypodermic and making

1 G. LaPorte - Confidential

2 sure there are no air bubbles in it?

3 A. Correct.

4 Q. Microliter number two, is that for the

5 same purpose?

6 A. Correct, same thing.

7 Q. Microliter three goes into the GC/MS and

8 that's the microliter that's analyzed?

9 A. Correct.

10 Q. So you do this for the heated sample --

11 for the heated vial and you do it for the

12 unheated vial, right?

13 A. Correct.

14 Q. Does the GC/MS give you some kind of

15 digital read out?

16 A. Yes.

17 Q. What format is the read out provided in?

18 A. So the read out contains varying

19 information. The first is that as we described

20 earlier, GC/MS is really two different

21 instruments. So the GC gives you a read out that

22 look -- basically like a graph and then that

23 identifies -- will show you where the 2-PE is on

24 that graph. And that's based on -- we haven't

25 gotten into this but I've run lots of quality

1 G. LaPorte - Confidential

2 control standards before. So I run blank
3 samples, I have to run a positive standard. I
4 run the acetonitrile cresol solution -- I run
5 that as a blank it also so there's nothing in it.
6 And then I have the standard so I know exactly
7 where the 2-PE is going to come out on this
8 graph. If you think about the Y axis of this
9 graph, it's in minutes -- it's in time. And so I
10 know that, you know, my sample will come out at
11 5.30 minutes for 2-PE, that's the GC output. The
12 mass spec or MS portion allows me to identify the
13 molecule of 2-PE. So that provides what we call
14 molecular information about that particular
15 molecule so that I can confirm that I'm analyzing
16 2-PE.

17 Q. Have you completed your response?

18 A. Yes.

19 Q. So the machine is going to give you two
20 forms of output; one is the graph and two is
21 molecule identifying information?

22 A. Yes.

23 Q. So going back to this process that you
24 described --

25 A. I'm sorry, can I just sort of -- just to

1 G. LaPorte - Confidential

2 be clear so we understand what the GC is. The GC
3 is all about separating the different components
4 in the ink. I typically use this analogy of, you
5 know, if you were to analyze a Coke, you get
6 sugar and caffeine and colorants and all that.
7 So those come out at different times on the GC.
8 That's exactly what happening on the GC with ink
9 because you get different times of when the
10 different components come out. And I know the
11 time for 2-PE based on the standard. On my
12 GC/MS -- my program is 5.30 minutes or around
13 that time.

14 Q. Have you completed your response?

15 A. Yes.

16 Q. This process that you described of using
17 the auto sampling, the agitation, that process is
18 not described anywhere in your report, is it?

19 A. No, it's -- all of that in is my notes.

20 Q. So I can't replicate this process using
21 your report, can I?

22 MS. PRIMAVERA: Objection.

23 MS. GUERON: Objection.

24 A. I mean, I've been -- I've written
25 thousands of reports in Federal Court. But if

1 G. LaPorte - Confidential

2 I'm an expert looking at another expert's report
3 there's no expectation that I can duplicate
4 everything based on just the report.

5 Q. Okay. I didn't ask you that. I asked
6 you if I can replicate your results based upon
7 the contents of your report?

8 A. Well, in theory, yes, you -- so I have a
9 reference in my report to a chapter that I
10 published that actually goes through the steps
11 like. It's published -- a published chapter that
12 goes through this. But I mean it's kind of --
13 the question you're asking me would be like,
14 well, if I watch Law and Order can I practice
15 law? I mean, you have to be an expert in the
16 area, you have to have basic chemistry knowledge.
17 When you refer to can you do this, unless you
18 have a chemistry background, I can't imagine you
19 can ever do this.

20 Q. If I was a chemist, can I replicate your
21 process using your report?

22 A. You should be able to because there's
23 references to it. I would say my notes would
24 provide that information that a chemist can
25 replicate this very easily.

1 G. LaPorte - Confidential

2 MS. COLWIN: Objection.

3 Q. So a chemist would need your notes to
4 replicate your work; is that correct?

5 A. Yes, I know when I've been an opposing
6 expert I always want the notes. I can't just
7 simply rely on the report.

8 Q. Is your use of o-cresol documented in
9 any of the professional standards you referenced?

10 A. It's definitely -- I mean, I have my --
11 I have a written and standard operating procedure
12 and it's in there. But, yes, o-cresol is
13 definitely mentioned in a number of professional
14 or peer review publications.

15 Q. Is it mentioned in any of the
16 publications cited in your report?

17 A. I'm not sure exactly what's been cited
18 but it's definitely in the peer review
19 publications.

20 Q. Is there anywhere in your report where I
21 can find the read out from the GC's graph?

22 A. No, that's -- that's in my -- that will
23 definitely in be in any notes.

24 Q. Is there anywhere in your report where I
25 can identify the output of the identified

1 G. LaPorte - Confidential

2 molecule from the MS portion of the analysis?

3 A. No.

4 Q. What was the read out that you obtained

5 for the first heated sample that you --

6 MR. BERMAN: Let's back up. I'll ask

7 the question again because it cut out.

8 Q. My understanding is that, based on your

9 testimony, you get two sets of output from the

10 GC/MS machine; is that correct?

11 A. It's -- so it is a printout or a read

12 out, if you will, that has both of those types of

13 information.

14 Q. Did you record the output from the GC/MS

15 machine that you obtained when you ran the first

16 heated sample from Q8?

17 A. All of my data is automatically printed

18 out and it's in my file, yes.

19 Q. You also -- so you have the output from

20 the GC/MS from the heated sample of Q8 and the

21 nonheated sample of Q8?

22 A. Yes.

23 Q. And you ran that twice, correct?

24 A. I'm actually looking just to confirm

25 but, yes, I ran -- tested those -- which document

1 G. LaPorte - Confidential

2 are we taking about now?

3 Q. Q8 -- still Q8.

4 A. I'm sorry, Q8, what was last three of
5 the Bates.

6 Q. 827 and 828 -- hold on. Q8 was
7 Bates-stamped 830, slash, 831.

8 A. Okay. I'm sorry, I have -- because all
9 of my -- I use the last three of the Bates in all
10 my GC/MS. I didn't use the Q numbers.

11 I did the test on -- twice. I did it on
12 page 1 or 8 -- Bates-stamped -- last three of the
13 Bates-stamp, 830. And then I did it on the
14 backside, Bates-stamped 831.

15 Q. So you only did one heated sample and
16 one unheated sample of page one of Q8, is that
17 right?

18 A. Well, it's one page so I would say the
19 front and the back. So, yeah, one heated, one
20 unheated for the front and one unheated and one
21 heated for the back. I mean, that's two for the
22 page, if you will.

23 Q. Okay. Now, I'm a little confused by
24 something you said. If it's literally the same
25 page, 830 and 831 are written on the same piece

1 G. LaPorte - Confidential

2 of paper, front and back, correct?

3 A. Correct.

4 Q. So isn't the sample of page one
5 necessarily also a sample of page two because
6 they're on the same paper?

7 MS. PRIMAVERA: Objection.

8 A. They're different samples. I mean,
9 certainly when I punch the holes I'm not -- I
10 make sure there's nothing -- there's no ink on
11 the backside of where I'm punching.

12 Q. Okay. So that's part of your process is
13 to see which face of the document has ink and
14 which face does not have ink in each of the
15 plugs?

16 A. I'm making sure that when I punch the
17 hole that I'm not hitting ink on the opposite
18 side.

19 Q. Okay. Is that process described
20 somewhere in your report?

21 A. No, it's almost like common sense. I'm
22 not going to take samples, you know, where I get
23 ink -- where I would get ink on -- where I would
24 punch through and get ink from the other side.

25 Q. In selecting your samples are there any

1 G. LaPorte - Confidential

2 other procedural safeguards that you employ?

3 A. Oh, yes, lots.

4 Q. Okay. Can you give me some examples?

5 A. The first thing is that I make sure when
6 I'm taking samples -- well, I would say the first
7 step is to make sure I don't want to -- I'm not
8 going to hit a sample of ink on the other side
9 for my GC/MS testing.

10 The next is I then look at it under -- I
11 look at the ink or the letters words with a
12 magnifying device. And then I find specific
13 areas that are amenable to what I would say the
14 ink analysis part. And that is generally don't
15 like to get into the curve areas. Ballpoint inks
16 will also do what's called gooping so I stay away
17 from the goop. I try to get straight lines and
18 then when I find a nice area that looks
19 consistent with pressure, typically like the
20 middle of the stroke -- like if you're drawing a
21 line -- and I'm just thinking of the letter "G"
22 if I go up with the letter "G" in all likelihood
23 I'll put more pressure down on the bottom or the
24 top. So I find this ideal kind of the area in
25 the middle. And based on the microscopic

1 G. LaPorte - Confidential
2 analysis I make sure that the ink is not -- it's
3 more thick in one area than the other. And then
4 I take a hole punch that will go into the
5 unheated vial and then I take a hole punch
6 adjacent to that area and then that will go into
7 the heated vial so that I'm keeping is as
8 consistent as possible with the amount of ink I'm
9 removing.

10 Q. Have you completed your response?

11 A. Yes.

12 Q. So the gooping should be avoided
13 because, what, it could affect the amount of 2-PE
14 that's present on the document?

15 A. The idea is that I want to try to as
16 much as possible to have similar amounts of ink
17 in the unheated and the unheated when I do the
18 testing. Now, I'll correct for now with o-cresol
19 but for the most part I want to just make sure
20 I'm getting the same amount of ink.

21 Yeah, if I took from a goop area then I
22 might have more ink and also the goop might dry
23 differently because it's thick and it's heavy on
24 the paper.

25 Q. Similarly with respect to a curved

1 G. LaPorte - Confidential

2 versus a straight line portion of the sample,
3 that could result in different amounts of ink
4 being removed, is that right?

5 A. Yeah, depending on where it is in the
6 curve. Like, you know, it depends on the
7 writing. Some people may have a big curve. If
8 you're kind of getting into sort of the middle of
9 that, that can work. But, once again, it's all
10 about sort of identifying whether there is sort
11 of differences in the amount of pressure that was
12 applied, which you can see under the microscope
13 by the amount of ink that's deposited down.

14 Q. The amount of ink deposited can vary
15 based upon whether there's gooping of ink,
16 whether there's curvature of the pen stroke and
17 whether there is a different -- or a lighter or
18 heavier pressure applied to the pen stroke; is
19 that right?

20 A. Correct. And then also at sort of the
21 tail or starting point of writing -- if you write
22 with a ballpoint ink sometimes it's doesn't --
23 not all of the ink is flowing out equally in the
24 beginning or when you're tailing off you lift the
25 pen so that you're not leaving as much ink in

1 G. LaPorte - Confidential

2 there. I kind of stay away from the ends. I
3 like the centers. Straight is nice -- is ideal
4 but it's not always that easy.

5 MR. BERMAN: Let's take a five-minute
6 break. It's been a while so let's do that.
7 Come back at 12:15.

8 (Whereupon, a brief recess was taken.)

9 MR. BERMAN: I propose we make this into
10 a lunch. We will come back at 1:00.

11 (Whereupon, a luncheon was taken.)

12 Q. Mr. LaPorte, before our break you had
13 mentioned that you ran some quality control
14 tests, do you recall that?

15 A. Yes.

16 Q. Can I find information about what
17 quality control tests you ran in your report?

18 A. That's all in my notes.

19 Q. We were also talking about the output of
20 the GC/MS system and you had mentioned that the
21 GC portion results in graphical output, do you
22 recall that?

23 A. Yes.

24 Q. You explained to me that the output of
25 the graph shows time on a Y axis, is that right?

1 G. LaPorte - Confidential

2 A. Correct -- I'm sorry, did I say "Y"?

3 It's an "X." Sorry.

4 Q. So X axis is left to right, correct?

5 A. Correct, yes, the horizontal axis.

6 Q. So when you're getting a measurement in
7 time, what does that mean?

8 A. When a chemical or when a material goes
9 through the gas chromatograph, what happens is it
10 separates into it's different components and so
11 when it exits the gas chromatograph and enters
12 the mass spectrometer, that happens at a certain
13 time and based on the chemical makeup of all the
14 different molecules that be would be in
15 particular in the ink so all the different
16 components that come out -- they come out at
17 different times because they're --

18 Q. Okay.

19 A. Yeah, so 2-PE comes out at, you know, at
20 a retention time of approximately 5.30 minutes on
21 the program that I use. Now, I do run a standard
22 of 2-PE beforehand so that I know that, you know,
23 that that's the retention time it should come out
24 at.

25 Q. When you say you run a standard, does

1 G. LaPorte - Confidential

2 that mean -- I'm paraphrasing -- you do a test
3 run of a sample of PE that you've known already?

4 A. Yes.

5 Q. So you're on that simple through your
6 system and you look and you see it comes out
7 about 5.3 minutes?

8 A. Correct.

9 Q. So these molecules are contained in the
10 GC system and then each kind of molecule will be
11 separated out at a specific point in time?

12 A. Yes.

13 Q. So the graphical read out that you get
14 will identify molecule one separates out at this
15 time, molecule two separates at that time?

16 A. Correct.

17 Q. And the MS portion is identifying the
18 molecule as it comes out?

19 A. Yes.

20 Q. So how do you compare the read out on
21 the GC/MS for the heated sample against the
22 unheated sample?

23 A. So there's a software in the
24 instrument -- hold on, let me step back -- so the
25 Y axis is an approximation, if you will, or the

1 G. LaPorte - Confidential

2 concentration of the 2-PE. So think of a curve,
3 right, that comes out at 5.30 minutes and it does
4 that -- I guess I shouldn't be saying doing that
5 on the record -- so it makes a curve and then
6 what will happen -- so depending on the height of
7 that curve, that's typically -- I mean, that
8 represents the concentration. So really the area
9 under the curve represents the entire
10 concentration of 2-PE. So there's a read out
11 that -- or some data that's printed out that has
12 that what that corresponding area under the curve
13 represents in terms of a quantity.

14 Q. So there's a mathematical computation of
15 the area under the curve?

16 A. Yes.

17 Q. How does that -- how is that compared
18 from the heated to unheated sample?

19 A. So now I take that area under the curve
20 for the unheated sample, which is now -- and once
21 again I'm correcting it with the o-cresol --
22 remember I have internal standards -- so I use
23 the o-cresol so it goes into a big formula and
24 what will happen -- essentially what we're doing
25 is we're comparing the quantity of 2-PE from the

1 G. LaPorte - Confidential

2 from that -- from the calculations under the
3 curve when it's unheated minus the quantity of
4 the 2-PE in the heated sample and then that's the
5 divided by the unheated and then you get a
6 percentage of how much 2-PE was lost from the
7 heated.

8 Q. Are you referring to something that's
9 typically denoted as R percentage point or
10 percentage symbol?

11 A. Yes, it can be R percentage or solvent
12 loss ratio, SLR.

13 Q. Okay. And the SLR or R percentage is
14 $\text{PEN} \text{ minus } \text{PEH} \text{ over } \text{PEN} \text{ times } 100$ -- PE subscript
15 "N" minus PE subscript -- I'll call it an "H," it
16 might be a Greek symbol -- over PE subscript
17 "N" -- which, again, the "N" might be a Greek
18 symbol too?

19 A. It's not. "N" is not heated and "H" is
20 heated. So it's pretty simple.

21 Q. So it's the PE of the unheated sample
22 minus the PE of the heated sample over the PE of
23 the unheated sample times 100?

24 A. Correct.

25 Q. Okay. So the PE of the heated sample,

1 G. LaPorte - Confidential

2 is that the area under the curve for the heated
3 sample?

4 A. Yes.

5 Q. Okay. So you're comparing the area
6 underneath the curve for each of these two
7 samples to come up with your solvent loss ratio?

8 A. Let's not forget there's a -- the
9 o-cresol calculation is built in there too so
10 that everything is corrected to the o-cresol
11 level.

12 Q. What does the o-cresol do to correct the
13 calculation?

14 A. That's built into the calculation to --
15 so that if I have -- so, for example, if my
16 peak -- I call it my peak -- the curve for the
17 ACN in the cresol -- I'll use some real numbers
18 so we can -- so it's easier to explain. So let's
19 say that peaks at 100, right, and the
20 phenoxyethanol peak is at 200, now when I run the
21 next sample my ACN plus my cresol might be at 150
22 and then my PE will be at 100. So now I have to
23 correct because my standard is telling me that
24 there's going to be some variations so that the
25 internal standard is there to correct that value

1 G. LaPorte - Confidential

2 so we're not -- it's almost you're comparing
3 apples to apples at that time.

4 Q. Is this process you just described using
5 the o-cresol to correct, is that referenced in
6 your report somewhere?

7 A. I'm not sure if it's referenced in this
8 report but it's definitely -- I mean, it's in
9 literature. It's kind of basic chemistry. Using
10 internal standards is kind of I would say
11 standard in the industry for when you're doing
12 quantitation.

13 Q. When you use the term ACN were you
14 referring to acetonitrile?

15 A. Acetonitrile.

16 Q. Acetonitrile. Now, the concept
17 underlying the analysis of the solvent loss
18 ratio -- and I'm paraphrasing so correct me if
19 I'm wrong -- is that ink starts out fresh and
20 when it's fresh, it would be expected to
21 evaporate more, right -- did I get that part
22 right?

23 A. Well, you're missing a part on the end
24 of what you're asking. So --

25 Q. Okay. Go ahead.

1 G. LaPorte - Confidential

2 A. So the idea is if the ink the fresh that
3 more PE will be evaporated from the heated
4 sample.

5 Q. Okay. So if you have a fresh sample of
6 ink and you treat it with heat, you would expect
7 a large proportion of the PE-2 to cook off?

8 A. Correct.

9 Q. Okay.

10 A. If I can from an analogy standpoint,
11 think about if you were to put fresh paint on a
12 room in your house and it's really hot, right.
13 So the hotter it is, the more it will drive off
14 that solvent when it's fresh. But once that
15 paint is dry and it's hot in the room, you're not
16 going to smell any solvents because it's dried
17 out.

18 Q. Okay. So in order to determine that a
19 lot of the PE-2 has cooked off, you would expect
20 to see a relatively high solvent loss ratio,
21 correct?

22 A. Yes.

23 Q. So is there a particular benchmark you
24 look for in your results to determine the age of
25 the ink sample?

1 G. LaPorte - Confidential

2 A. If it's 25 percent -- if the solvent
3 loss ratio exceeds 25 percent then you can say
4 with a high degree of probability or a high
5 degree of certainty that the ink is less than two
6 years old.

7 Q. Okay. Why 25 percent?

8 A. That's the -- essentially, that's the
9 established number that's been used in the field
10 based on research. I can tell you that I've
11 been -- I probably run this type of testing, I
12 don't know, hundred times a year at least and
13 I've done validation type samples. So I will see
14 inks that are less than two years old that will
15 have values in the -- you know, 15 percent plus.
16 But the idea though is that there's kind of an
17 error rate built into all of that so that when
18 you have when you hit 25 percent, you have this
19 very high degree of confidence. It allows you
20 what we call measurement error, which is a very
21 natural part of any kind of chemical
22 measurements. There's going to be variation so
23 the 25 percent is, if you will, I think the best
24 way to put it is it's a conservative type number
25 that allows somebody to say something with a high

1 G. LaPorte - Confidential

2 degree of probability. I don't want to use the
3 word "probability" because I don't want to
4 connote there's some statistics involved but it's
5 highly probable -- it's very strong evidence.

6 Q. We're going to delve into that a little
7 bit more.

8 Are these validations that you just discussed
9 published?

10 A. I have -- I certainly presented it
11 publically and -- about my validations and also
12 there's been a lot of work done by other
13 researchers in this particular area too.

14 Q. Can I find any of those validations you
15 just referenced in any of these published peer
16 reviewed publications?

17 A. I believe that -- so I published a
18 chapter in a text book and I believe I referenced
19 those validations. There are peer review
20 publications that do contain this information as
21 well too.

22 Q. Can you sitting here today identify any
23 of them for me?

24 A. Yes, there's one by Gaudreau and
25 Brazeau.

1 G. LaPorte - Confidential

2 Q. Aren't there some published works that
3 relied upon a higher threshold than 25 percent?

4 A. Not necessarily for a two year
5 threshold. There's a published paper that relies
6 on 35 percent to say that an ink is less than
7 18 months old.

8 Q. Are there any with respect to the two
9 year threshold?

10 A. 25 percent is -- there are some -- there
11 are some other experts out there that will try to
12 divvy this up a little bit more and say that
13 it's, you know, less than twelve months, it's
14 less than eighteen months, it's less than six
15 months, you know, with a high degree of
16 probability. I don't agree with that. I like to
17 just use the two year threshold.

18 But there are certainly times where the
19 solvent levels are extremely high, which I found,
20 you know, in this particular case and I talk
21 about this in my report. The solvent levels are
22 very high, much higher than I would expect to see
23 in anything that's, you know, four, four and a
24 half years old. And in a solvent loss ratio it
25 exceeds that 25 percent.

1 G. LaPorte - Confidential

2 Q. Have you completed your response?

3 A. Yes.

4 Q. Did you just tell me that you disagreed
5 with some of the different standards that are
6 being used for different aging periods?

7 A. No, I would say that I'm more
8 conservative. I don't necessarily disagree with
9 the idea of it. It's not something -- I don't
10 adhere to the idea of trying to identify with a
11 high degree of probability that an ink is less
12 than six months old, you know, based on a certain
13 solvent level.

14 Q. Well, I'm not sure I understood that.
15 Wouldn't be more conservative imply that you
16 would have a higher percentage threshold for
17 solvent loss in order be more confident in your
18 results?

19 A. No, the higher -- the more conservative
20 is using the two-year threshold. Nobody that I
21 know of -- there's nothing in the literature that
22 would even suggest that a value above 25 percent
23 would indicate that an ink is more than two years
24 old. And based on -- I've done presentations on
25 this data as well too where I've looked at known

1 G. LaPorte - Confidential

2 samples that were known to be more than two years
3 old and I've never seen any level above
4 25 percent.

5 Q. We'll turn to that a little bit more
6 later.

7 With respect to your general thesis, right,
8 which is that for a document, you would expect to
9 see a higher solvent loss ratio if it was a newer
10 document, right?

11 A. Not necessarily.

12 Q. Why or why not?

13 A. So the way you're asking the question
14 now almost implies that we can compare solvent
15 loss ratios. The issue with that though is that
16 if inks have different formulations, they may dry
17 at different rates. So we kind of stay away from
18 the idea of comparing -- you know, especially if
19 inks are different formulations and then using
20 that for each.

21 The other thing is that there may be --
22 so we can have two documents. And, once again,
23 depending on how the ink is aging a document can
24 be two weeks older than another document and then
25 maybe have a much lower level with the same ink

1 G. LaPorte - Confidential

2 under the same circumstances depending on when
3 you do the analysis in determining -- what the
4 true age of the documents are. So if they're
5 like less than six months, we can see a lot of
6 variation in values, you know, spanning over --
7 whether you did the test, I don't know, when it
8 was five months old versus six and a half months
9 old.

10 And then also depending how the document
11 was stored. If they're stored a little
12 differently, then you might have some
13 different -- you might have some variation in the
14 solvent loss ratio too.

15 Q. In your report you state that you had
16 seen values in the high teens in known age
17 samples that were less than two years old many
18 times over the course of performing ink dating
19 analysis hundreds of times.

20 You stand by that statement, right?

21 A. Yes.

22 Q. So isn't that statement, that you have
23 observed values in the high teens for known age
24 samples inconsistent with your overall thesis
25 that, you would expect to see a high solvent loss

1 G. LaPorte - Confidential

2 ratio?

3 MS. PRIMAVERA: Objection.

4 A. No, not at all. So my statement in my
5 report says that when you exceed 25 percent you
6 can say with a high degree of probability that --
7 sorry, a high -- with a high degree of confidence
8 that the ink is less than two years old.

9 But when we start narrowing that down
10 and we try to peg off and say, oh, well, it's
11 highly probable it's less than 12 months or it's
12 highly probable that it's less than six months,
13 then you start deviating really from the
14 conservative part about just staying with the two
15 years.

16 Q. So let's stick with the two years for a
17 moment.

18 If I understand the underlying hypothesis
19 correctly, then wouldn't you expect less
20 certainty in the aging of the sample as the
21 percentage of solvent loss ratio decreases?

22 A. Not necessarily. I mean, so yes, we do
23 use that as kind of a benchmark. But you can
24 have an extremely high level of 2-PE but then
25 also have a lower solvent loss ratio in and it

1 G. LaPorte - Confidential

2 just depends where the ink is in its aging
3 process, the type of ink that was used. And as I
4 explained earlier I think we had discussed this
5 early on in the deposition, but what happens when
6 the ink dries is it's hardening. So if it
7 hardens fast, you might be able you might trap a
8 lot of 2-phenoxyethanol -- 2-PE in it. So you
9 trap the 2-PE in there as the ink hardens and
10 that can happen at stages. Like, if it's not
11 fully hardened, right, and now we heat it, then
12 we'll let all that 2-PE out.

13 Trying to interpret solvent loss ratio
14 levels outside of the fact that, you know, an ink
15 is less than two years old gets very complicated.

16 Q. Well, let's stick with the two year
17 measurement you're referring to, which you
18 mentioned was the most conservative approach,
19 correct?

20 A. Yes, from a highly probable -- from a
21 highly probable means that I'm virtually certain.
22 As a -- I've been a forensic scientist for 29
23 years. I would hope that I would never be wrong
24 about something so I want to be as conservative
25 as possible so I like to stick with the two years

1 G. LaPorte - Confidential

2 in that 25 percent threshold but there are times
3 when, you know, let's say I have a little less
4 confidence but I have a high level of 2-PE and
5 I'm close to 25 percent, you know, that's still
6 strong evidence that it's not two years old.

7 Q. I thought you said 25 percent is the
8 threshold and it has to be higher than
9 25 percent.

10 A. For a highly probable. We have
11 different degrees of conclusions.

12 Q. Okay. Then can I understand that to
13 mean that you have less certainty as the
14 percentage of solvent loss ratio decreases?

15 A. It will depend on the amount of 2-PE
16 present also, whether you -- so in this
17 particular case, I would say that the 2-PE levels
18 were -- I'm just looking at this real quickly --
19 I would say about three to four times higher than
20 what I would normally see in something that's,
21 you know -- what I would see in something that's
22 less than two years old.

23 So just to throw a number out, so one of
24 these levels came out to 1.2 million. What I
25 would expect to see sometimes or what I typically

1 G. LaPorte - Confidential

2 would see with 2-PE levels that, you know, are
3 showing less than two years old might be a
4 400,000.

5 Q. That 1.2 million data point you
6 mentioned, is that in your report?

7 A. It's all in my -- it's in my work file
8 in my notes.

9 Q. Aren't there cases where you have
10 testified that you cannot draw conclusions from
11 result that are below the 25 percent threshold?

12 A. Not a highly probable and solely based
13 on a threshold.

14 Q. Went you say the "threshold," are you
15 referring to that 1.2 million number that you
16 just referenced?

17 A. No. Sorry. So it's if there's -- if
18 there is an extremely high level of 2-PE and then
19 you have a sample of ink or that -- you know,
20 that's showing -- that doesn't get to 25 percent,
21 you're confidence level can decrease. But in
22 this particular case the ink from Q8 was the same
23 as the ink from Q12. So we can draw some
24 parallels with that same formulation of ink
25 that's being used.

1 G. LaPorte - Confidential

2 Q. Did you tell me earlier that you don't
3 like to say they're the same?

4 A. So they're matching formulations of ink.

5 Q. Didn't you testify in the Malek matter
6 that if the amount of the solvent decreases by
7 25 percent once it's heated then that tells you
8 that it's fresh because you're able to drive off
9 all the solvents?

10 A. In the Malek matter I believe I would
11 have testified to something like that. I don't
12 have my transcript. There's lot more that I had
13 before and after I think I made that statement.

14 MS. COLWIN: Objection.

15 Q. Was there a Grosvenor matter you were
16 testifying in?

17 A. Where did that take place?

18 Q. Give me a moment that was in the Matter
19 of Grosvenor Property Developers Limited (In
20 Liquidation) in the Matter of Insolvency Act
21 1986, which was in the high court of Chancery,
22 which I believe is London, England.

23 Does that sound familiar? It's referenced --

24 A. Yes.

25 Q. -- it's referenced in your report --

1 G. LaPorte - Confidential

2 both of these matters are referenced matters
3 where you were an expert.

4 A. Yes, I remember the Grosvenor matter.

5 Q. In this matter didn't you conclude that
6 an eight percent result -- that based on a
7 chemical analysis you performed using duplicate
8 sampling, the average amount of 2-PE lost in a
9 signature was eight percent, which did not exceed
10 the 25 percent value necessary to conclude that
11 an ink is less than two years old?

12 A. Yes, with a high degree of probability.

13 MS. PRIMAVERA: Objection.

14 A. Anything less than ten percent is
15 pretty -- I don't -- I can't say that it proves
16 that a document is more than two years old but
17 it's a level that you shouldn't make any
18 interpretations from other than really it's
19 inconclusive.

20 Q. Where does that ten percent number come
21 from?

22 A. No, I'm just saying that based on my
23 experience. When I get single digit numbers like
24 that, that to me that's inconclusive.

25 Q. So that's based upon your independent

1 G. LaPorte - Confidential

2 experience and judgment?

3 A. Based on performing this testing, you
4 know, for the past 18 years and hundreds of times
5 per year, yes.

6 Q. Okay. So is there any widely accepted
7 scientific standard that reflects that a ten
8 percent of the threshold?

9 A. No, I'm just saying that when I get a
10 single digit number based on doing known -- you
11 know, analyzing known samples, that's not a
12 number that you can draw a conclusion from.

13 Q. Okay. So somewhere between ten percent
14 and 25 percent that changes?

15 A. No, it all depends on the amount of
16 2-phenoxyethanol and that would depend on the
17 confidence or the type of conclusion that you're
18 going to draw.

19 Q. When you say it depends at least in part
20 on the amount of 2-PE, right, what's the standard
21 for how much 2-PE there should be?

22 A. So that would be based on experience and
23 that's difficult to put because the method that I
24 use may be more -- the way I extract the ink and
25 the method that I use, I'm accustomed to what I

1 G. LaPorte - Confidential

2 would consider to be a very high level.

3 Q. In the Grosvenor never matter you stated
4 that it is requisite that the established
5 threshold level of 25 percent be exceeded to
6 conclude with strong evidence that the signature
7 was executed within the past 24 months.

8 Do you still stand by that statement?

9 A. Yes. Keep in mind that in the UK we
10 generally don't use our same conclusion area
11 scale as we do here. But, yes, so that would be
12 very strong evidence to be able to say above
13 25 percent.

14 And if I remember correctly in the
15 Grosvenor matter, there was a very low level of
16 2-PE as well too.

17 Q. Well, again, the amount of 2-PE is not
18 referenced in your report in the Grosvenor matter
19 so I can't make that determination. I'll have to
20 take your statement as face value for that.

21 A. Yeah, it was a low level. I mean,
22 usually when getting at eight percent it will
23 be -- you know, anything with single digits
24 typically it would be in the low level of 2-PE.

25 Q. So let's talk about the sampling for a

1 G. LaPorte - Confidential

2 moment. You took two samples of document eight
3 here, correct?

4 A. (No verbal response.)

5 Q. Remember we talked about the sixteen
6 plugs, you divided it into two trances of eight.
7 You did a heated sample of four, an unheated
8 sample of four and then you ran that test twice,
9 right?

10 A. Correct. Q8 was the 830, 821, right?

11 Q. Correct.

12 A. Yes.

13 Q. So we agree on that, right?

14 A. Yes.

15 Q. And you came up with two different
16 measurements; one for each set of samples, right?

17 A. Correct.

18 Q. And there was some variance between the
19 results obtained between sample pairing one and
20 sample pairing two, correct?

21 A. Correct.

22 Q. Are you familiar with the concept of
23 standard deviation?

24 A. Yes, I am.

25 Q. Is there some reason that that concept

1 G. LaPorte - Confidential

2 is inapplicable to your sampling here?

3 A. Because they're two levels that I got --
4 that I obtained, there were 33 percent and
5 28 percent. Both were above 25 and it averages
6 to 31. I can tell you that a five percent
7 difference isn't a lot of standard -- there's not
8 lot of standard deviation in there.

9 No, I don't need to use a standard
10 deviation because it will not go below
11 25 percent.

12 Q. What do you base that on?

13 A. Because the two numbers are 33 and 28.
14 So it would be -- how can that -- when you
15 average that, that's 31. So how does that go
16 below 25 when you don't have a number below 25?

17 Q. What I'm asking you is how does the mean
18 of the two measurements impact whether the
19 standard deviation is applicable to your
20 analysis?

21 A. The standard deviation applies to the
22 mean.

23 Q. Are you aware that with a sample size of
24 two the standard deviation for the sample
25 measurements is 6.25?

1 G. LaPorte - Confidential

2 A. No --

3 MS. PRIMAVERA: Objection.

4 MS. GUERON: Objection.

5 A. No, that's not -- when you do an average
6 of 33 and 28 both values are above 25 so the
7 average is 31 but it's not below -- neither of
8 those values are below 25.

9 Q. The average is, in fact, 30.5, isn't it?

10 A. I can tell you everything is rounded
11 because everything is plugged into an Excel
12 worksheet. Everything is rounded to -- the other
13 thing is mathematically when you average 33 and
14 28, which have no decimals on them, its improper
15 to actually put a decimal on there.

16 Q. Okay. Regardless, would you agree with
17 me that the calculation of a mean and the
18 calculation of the standard deviation are going
19 to give you different results?

20 A. Yes, of course.

21 Q. Have you considered the confidence
22 interval that applies to your results as a result
23 of the standard deviation?

24 A. It's not necessary because they're above
25 25 percent.

1 G. LaPorte - Confidential

2 Q. But, again, this 25 percent is not a
3 standard number, it's just based upon your
4 experience, right?

5 MS. PRIMAVERA: Objection.

6 MS. GUERON: Objection.

7 A. No, you're mischaracterizing what I
8 testified to here. 25 percent is something
9 that's been established in the literature and is
10 used by a number of other ink experts.
11 25 percent for two years is a -- is a
12 well-established figure. I'm saying both of
13 these numbers are both 25. So if I had 27 and a
14 23, then I would have to do the average of that
15 right and that would be different. But both
16 these numbers are over 25.

17 Q. Setting aside -- I agree both these
18 numbers are over 25 so we're on the same page
19 with that.

20 What I'm basically getting at here is how do
21 you know you don't have sampling error when you
22 only have two samples with a sample size of two
23 you would have a standard deviation of 6.25,
24 which leaves you a very wide range -- with a
25 sample size of two measurements, how can you be

1 G. LaPorte - Confidential

2 sure that you eliminated measurement error from
3 the possible solutions here? How do you know you
4 just haven't sampled two results that happen to
5 be above 25 percent where as if you took more
6 samples you might get numbers under 25 percent?

7 MS. PRIMAVERA: Objection.

8 A. So, first of all, I don't know where
9 you're getting your standard deviation and what
10 confidence interval you're using for that. I'm
11 not going to accept what you're telling me is the
12 standard deviation.

13 But to answer your question with respect
14 to measurement error that's why I run the samples
15 twice. Can we run three, four, five, six or ten
16 times, yes. To me, with a 33 and 28 so we --
17 that's actually a very good level. And then
18 don't forget what I said earlier, is 25 percent
19 is really -- it has some error built -- it has
20 measurement error built into it already. So when
21 I'm above 25 percent with two measurements and
22 both of those are, you know, what I'm seeing in
23 terms of my data, there's consistency with my
24 internal standard, with the blank that -- sorry,
25 with two samples that I ran in terms of the way

1 G. LaPorte - Confidential

2 they look on the GC/MS. So all of that is
3 consistent. There is no indication here
4 whatsoever that there would be a lot of
5 measurement error in these two. These are
6 actually pretty good values -- these are strong
7 values and they're both above 25 percent. I'm
8 100 percent confident in the data.

9 Q. Well, we can we can view that
10 differently. I understand you took two
11 measurements and they're both over 25 percent.
12 Sitting here today you can't tell me that if you
13 took more measurements you wouldn't get any
14 results under 25, can you?

15 MS. COLWIN: Objection.

16 A. Now, we can go for anything in the world
17 that's done when you're take measurements.

18 I can tell you I have a very high degree
19 of confidence in these values based on the data
20 that I have and based on the fact that there's
21 not a lot of deviation in these values either.

22 Q. Your confidence is not based upon any
23 inferential statistic work, is it?

24 MS. PRIMAVERA: Objection.

25 A. It's based on the average value. The 33

1 G. LaPorte - Confidential

2 and the 28 if we go your way could be 40 and 37.

3 It can go in both directions. So when you say

4 I'm not sure -- well, it be 40 percent also if

5 we're taking measurement error in.

6 I have two values that are close in

7 proximity to each other and the data -- the data

8 is very strong and supports what I'm seeing in

9 these values to give you an extremely high degree

10 of confidence in the results. I have no doubt

11 about the result at all.

12 Q. That's not my question. I understand

13 that.

14 What I'm trying to just clarify here. Your

15 degree of certainty is not based upon statistical

16 analysis, it's not based upon a confidence

17 interval based upon the standard deviation, do we

18 agree on that?

19 MR. PRIMAVERA: Objection.

20 A. Not really because it's based on the

21 fact that these levels exceed 25 percent. I

22 mean, that's -- the 25 percent has been a value

23 that's been established really through a lot

24 of -- you know, a lot of research, a lot of

25 science that that is a very conservative level to

1 G. LaPorte - Confidential

2 be able to say that something --

3 Q. Have you completed your response?

4 A. No.

5 MS. PRIMAVERA: I'm sorry, I don't think
6 he finished. But go ahead.

7 A. So the 25 percent threshold level has
8 uncertainty built into it. I've never seen a
9 sample that was -- that was more than two years
10 old that even exceeded 20 percent.

11 Q. Have you completed your response?

12 A. Yes.

13 Q. I understand that you're telling me that
14 this is based upon your scientific experience.
15 I'm trying to clarify that whatever science
16 you're applying is not statistical science.

17 MS. PRIMAVERA: Objection.

18 Q. Do you have any degree in statistics or
19 any --

20 A. I have --

21 Q. Go ahead.

22 A. I have minor in statistics, yes.

23 Q. When I'm referring to "statistics," you
24 know what I'm referring to, right?

25 A. Yes.

1 G. LaPorte - Confidential

2 Q. So you understand the concept of a
3 confidence interval?

4 A. Yes.

5 Q. So the confidence that you have here is
6 not based upon any particular confidence
7 interval, is it?

8 MS. PRIMAVERA: Objection.

9 A. No, because I did not do the full -- I
10 don't have to do a statistical analysis when I
11 have two levels that are above the 25 percent
12 threshold.

13 What that tells me is if you have a 28
14 and 33 is this -- you know, going with your
15 argument this could just as easily be 35 and 40,
16 right?

17 Q. It can be anything --

18 A. 28 and 33 it does not go below 25.
19 There's no indication here that these levels
20 are -- not to mention these are extremely high
21 levels of 2-PE in these samples.

22 Q. Let me give you an analogy, okay? We
23 can we can stipulate that it's an analogy. It's
24 not exactly pertinent to this particular fact
25 pattern.

1 G. LaPorte - Confidential

2 For example, if you wanted to determine the
3 temperature in a room, okay, you might take
4 samples of the temperature, right?

5 A. Yes.

6 Q. And your certainty as to the actual
7 temperature of the room is going to increase as
8 you take more samples, right?

9 A. Yes.

10 Q. And if in that room there's an air
11 conditioner on one side of room and a heater on
12 the other side of the room then it's going to
13 matter where you draw your samples from, correct?

14 A. That's a possibility.

15 Q. And if you take two samples and you
16 happen to take the two samples near that air
17 conditioning, you're going to get one set of
18 values, right?

19 MS. PRIMAVERA: Objection.

20 A. Yes.

21 Q. And if you take two samples on the other
22 end of the room next to the heater you'll get two
23 other results, right?

24 A. Yes.

25 MS. PRIMAVERA: Objection.

1 G. LaPorte - Confidential

2 Q. So can you have any degree of confidence
3 about the temperature in the room overall if your
4 two samples are near either of those two end
5 points?

6 MS. PRIMAVERA: Objection.

7 A. Your analogy is completely wrong. The
8 way your analogy should be presenting is if we
9 wanted to know if the temperature in room was
10 above 65 degrees and we took a measurement in one
11 area that was 69 and the other a was 66 then we
12 can say that with a pretty high degree certainty
13 that it's not below 65. You're taking an
14 absolute value and trying to statistically
15 analyze this. This is based on a threshold value
16 of 25 percent and both numbers are above
17 25 percent.

18 Q. Let's look at -- in your methodology you
19 heated your samples to 70 degrees for 90 minutes,
20 right?

21 A. Correct.

22 Q. Aren't there other published works where
23 you heat the samples to 80 degrees?

24 A. So there's been research in this area if
25 I heated the samples to 80 degrees, there's a

1 G. LaPorte - Confidential

2 chance I would actually get much higher levels.
3 The idea of using the 70 degree Celsius
4 temperature is that we don't want to heat it too
5 much. We just want to lightly agitate the ink
6 because once we start heating it at higher
7 temperatures then it could actually be drier but
8 the high temperature will break that apart. So
9 70 degrees has been sort of optimized I will say
10 that. And I did -- we did our own research when
11 I was at the Secret Service where we tested
12 100 degrees, 50 degrees, 80 degrees -- we did a
13 whole range of temperatures. We did find out
14 that, like, 100 was way too high. You'll elicit
15 2-PE -- high levels of 2-PE when you start
16 heating at 100 degree Celsius.

17 So 70 is an optimal temperature that's
18 really intended not to -- if you will, not to
19 disturb the ink too much but just to lightly
20 agitate it. And if it's fresh, then you'll still
21 elicit lots of 2-PE.

22 Q. Okay. But that's not what I asked you.
23 I asked you if there are other papers where the
24 samples are heated to 80 degree?

25 A. I'm not sure if those papers are

1 G. LaPorte - Confidential

2 research papers or if they're actually, you know,
3 papers where they use that methodology in case
4 work.

5 Q. Are you familiar with the work of
6 Dr. Valery Aginsky?

7 A. Yes.

8 Q. Are you familiar with his paper,
9 Determination of the Age of Ballpoint Pen Inc by
10 gas and densitometric thin-layer chromatography?

11 A. So I believe that was like a 1990
12 publication. I know Dr. Aginsky uses 70
13 degrees -- now he does.

14 Q. In that paper he used to 80 degrees,
15 didn't he?

16 A. I think that was in the '90s, yeah.
17 That's when we started -- there was a process
18 that went on. The Canada Border Services Agency
19 did research in this area as well. They
20 optimized 70 and then when I was at Secret
21 Service we liked the idea of 70 as well.

22 Q. Do we agree that standards change over
23 time?

24 A. So that's more --

25 MS. PRIMAVERA: Objection.

1 G. LaPorte - Confidential

2 A. As a scientist I would say that our
3 knowledge should evolve over time, right, it gets
4 better. So the idea that you know Dr. Akinsky
5 was using 80 degrees back in the 1990s -- you
6 know, we learned a lot since then.

7 Q. In connection with your heating of the
8 samples, is it your position that this is a model
9 that's generalized to all inks stored in
10 different conditions and on different papers?

11 A. So there's been a lot of research
12 looking at different papers in different
13 conditions.

14 But, generally speaking, this model
15 applies to the document that have been stored at
16 what I would call general room temperature,
17 indoor environment type things. So it's not --
18 you know, it's not intended for documents that
19 have been, you know, stored in the extreme cold
20 or, you know, but if a document was exposed to
21 extreme heat then actually we probably wouldn't
22 get values like this because it would evaporate
23 the 2-PE.

24 Q. Are you familiar with the work of a
25 Celine Weyermann?

1 G. LaPorte - Confidential

2 A. Yes.

3 Q. Are you familiar with the paper, the
4 Potential of Artificial Aging for Modeling of
5 Natural Aging Processes of Ballpoint Ink?

6 A. Yes, and I believe that refers to dye
7 components.

8 Q. There's statement in that paper that
9 says no model can be generalized to all inks
10 stored under different conditions and on
11 different papers. Do you agree with that
12 statement?

13 A. I would agree different conditions, yes.
14 Like -- and I just explained that; extreme cold,
15 extreme heat.

16 Q. And you're familiar with the work of
17 Agnes Koenig?

18 A. Yes.

19 Q. Are you familiar with the paper
20 Comparative Study of Ballpoint Ink Aging
21 Parameters Using GC/MS?

22 A. I believe so.

23 Q. Okay. And do we agree then -- I think
24 you mentioned this in your previous testimony --
25 that the shape of the curvature of an ink stroke

1 G. LaPorte - Confidential

2 can impact the amount of concentrate that's
3 lifted from the paper?

4 A. Yes. So the idea is that -- depending
5 how it's curved and whether somebody is actually
6 holding their pen on an angle when they go
7 through that and how much they angle, yes,
8 there's different amounts of ink that will be
9 deposited during that sequence of writing.

10 Q. Okay. And in research work, ink entries
11 are generally drawn as straight lines, correct?

12 A. Not necessarily. I believe there has
13 been some research -- actually Canada Border of
14 Services Agency where they actually had some
15 writing that they looked at well. I know when I
16 was at the Secret Service -- and we did research
17 in area -- we did straight lines and then we did
18 writing too. But it's more to help you sort of
19 understand -- you know, this is all part of the
20 research mechanism to control variables as much
21 as possible.

22 Q. But in -- outside of a lab when writing
23 actually hits the page sometimes the lines are
24 not straight, correct?

25 A. Oh, yes, I think I explained that

1 G. LaPorte - Confidential

2 earlier there's -- yes.

3 Q. If you have, for instance, the letter
4 "O," isn't the solvent going to defuse
5 differently than if you have just a straight
6 line?

7 A. Not necessarily. It depends on how the
8 "O" is -- you know how big the "O" is, where
9 you're testing from the "O." And then once
10 again, this is based on a microscopic analysis in
11 making -- you know making a judgment of how much
12 ink -- if it looks -- if it appears to be heavily
13 inked in one area versus the other.

14 Q. Okay. Do you agree with the statement
15 that higher quantity of solvents may be found in
16 letter with dense lines compared to a straight
17 line of the same length?

18 A. No, not necessarily because I think it
19 all depends on -- so the key that's missing from
20 all of this that -- the questions that you're
21 raising is that if you take unheated and heated
22 samples from the same place, right, then none of
23 that matters. As long as you're taking adjacent
24 pairs of hole plugs where the holes are adjacent
25 to each other. If you're in a heavily inked area

1 G. LaPorte - Confidential

2 versus a lightly inked area, that's fine. The
3 part where you can create a lot of deviation
4 would be if you're taking an unheated punch from
5 one area and then a heated punch from a
6 completely different area.

7 Q. I think we discussed earlier that the
8 pen flow rate matters in terms of the results,
9 correct?

10 A. If you're making absolute measurements,
11 yes. We're not making absolute measurements
12 because we're comparing unheated with heated all
13 the time and those hole punches are taking from
14 the same area. This is -- I explained a lot of
15 this in the book chapter that I wrote on this
16 about sampling and it's definitely important.
17 But it's all about taking -- when you take those
18 paired samples, making sure they're from the same
19 area.

20 Q. Are you familiar with the paper by
21 Magdalena Ezcurra, E-Z-C-U-R-R-A, Analytical
22 Methods For Dating Writing Instruments Inks on
23 Paper?

24 A. Yeah, I believe she's from South
25 America. Is it Brazil or --

1 G. LaPorte - Confidential

2 Q. I can't determine that based on her name
3 but I'll take your word for it.

4 A. Not based on her name. I didn't know if
5 the paper -- but, yeah, I know they've been doing
6 some work down in South America.

7 Q. Okay. Are you familiar with her
8 interaction plots for DR fitted means?

9 A. I know -- I read that paper but, no, I'm
10 not -- I don't know off the top of my head. I
11 would have to have that paper in front of me.

12 Q. Do you disagree with her work in that
13 paper?

14 MS. PRIMAVERA: Objection. He didn't
15 read it.

16 A. Yes, I would have to go back to this. I
17 can say with a very high degree of confidence
18 that I've read every paper that has to do with
19 ink dating -- assuming that it's in English as
20 well too. But that one -- it's been a while
21 since I reviewed that. I would have to have the
22 paper in front of me.

23 Q. Okay. Do you agree that the paper can
24 impact the analysis -- the paper that the sample
25 was drawn from?

1 G. LaPorte - Confidential

2 A. In terms of what type of paper? Like,
3 what do you mean by the paper?

4 Q. For instance, does it make a difference
5 whether it's recycled or non-recycled paper?

6 A. As I mentioned earlier -- and I've done
7 the same work my myself when we were at Secret
8 Service. Yeah, paper can have an impact but
9 typically the type of paper that you use isn't
10 going to make the process slower, if you will.
11 So usually the paper -- depending on the paper --
12 like highly calendar paper, very smooth paper,
13 glossy type paper, the 2-PE will evaporate very
14 fast from it because it doesn't really absorb
15 into the paper as much. But none of these
16 studies really talk about -- I mean, they don't
17 show that that certain type of paper will
18 actually cause the drawing to be extremely slow.
19 And that does go for when you're comparing -- you
20 know, obviously, when I compared Q80, I'm
21 comparing the samples from the same paper. So
22 once again, this is a relative comparison.

23 If I was comparing these samples to
24 another page, then that's when you have to be
25 careful in interpreting the solvent loss ratios.

1 G. LaPorte - Confidential

2 Q. Are you familiar with the work of
3 Patricia Giebink, G-I-E-B-I-N-K, Erich Speckin,
4 Jason Harner, The Dating of Writing Inks Through
5 2-phenoxyethanol?

6 A. That's a not a peer reviewed published
7 paper though.

8 Q. Are you familiar with that work?

9 A. I am familiar with the work. They
10 presented it at a meeting but it was never peer
11 reviewed and published.

12 Q. Have you critiqued that work?

13 A. Probably, yes.

14 Q. Do you -- are you familiar with
15 conclusions in that paper?

16 A. I wouldn't trust the conclusions in that
17 paper, it's never been peer reviewed. I believe
18 that's a paper from 2000 -- maybe mid 2000s --
19 2010, '11, something like that. They never
20 produced any other data.

21 Q. Do you agree with the statement that the
22 long-term behavior of solvent evaporation isn't
23 well-known or understood?

24 A. It depends how you determine long-term.
25 I think -- I would say it's pretty well

1 G. LaPorte - Confidential

2 foundational that the two year threshold is
3 something that everybody is comfortable with. If
4 somebody found high levels of 2-PE in a document
5 that was greater known to be greater than two
6 years, they would publish that very fast, as
7 would I.

8 Q. Are you familiar with the paper again by
9 Celine Weyermann, Joseph Almog, Jurgen Bugler and
10 Antonio Cantu?

11 A. Yes.

12 Q. Entitled Minimum Requirements For
13 Application of Ink Dating Methods Based on
14 Solvent Analysis in Case Work?

15 A. Yes, I'm aware of all of those authors.
16 Specifically I trained under Dr. Cantu.

17 Q. Dr. Cantu is a well-respected person in
18 this field of study, correct?

19 A. He's well-respected, yes. I trained
20 under him.

21 Q. As is Dr. Aginsky, correct?

22 A. Dr. Aginsky, we have some -- I will say
23 we have some differences. But I would say that a
24 lot of the work he's done in this field has been
25 instrumental.

1 G. LaPorte - Confidential

2 Q. Isn't he the inventor of this 2-PE
3 solvent loss ratio methodology?

4 A. Not necessarily would I call him the
5 inventor. He certainly had a big part in moving
6 this. The way I would characterize this is
7 there's been a lot of research in this area that
8 added on to Dr. Aginsky's initial finding. But
9 really where it all started was back in the 1980s
10 by a gentleman by the name of Larry Stewart and
11 sort of built from there.

12 Q. Is Celine Weyermann respected in this
13 field of study?

14 A. Celine Weyermann -- I know Celine very
15 well, she's a researcher. She doesn't do case
16 work so she's used to working in a research
17 environment but I know who she is.

18 Q. Okay. Turning back to the paper I just
19 mentioned, Minimum Requirements For Application
20 of Ink Dating, there's a statement in that paper
21 that says, moreover, the time span that can be
22 considered to date inks through solvent analysis
23 using GC/MS is seriously questioned in the
24 forensic community.

25 Do you agree or disagree with that statement?

1 G. LaPorte - Confidential

2 A. I would have to -- I would have to see
3 what the statements are before and after what you
4 read me. But what I would agree with is that the
5 timeframes of using three months, six months,
6 nine months, twelve months, eighteen months,
7 there's -- I would say there's a fair amount of
8 contention with that. But the two year
9 timeframe, like I said, I'm not aware of anybody
10 that's ever said that when you look at -- you can
11 examine a document that's over two years old and
12 you'll have high levels of solvents in them.

13 Q. The next very next line in that same
14 paper says, Brunelle and Crawford stated the that
15 ink dating dated technology which is based on
16 GC/MS analysis cannot be used to date inks over
17 six months old and Bugler et al recommended to
18 analyze ink with a maximum age of three to
19 four months.

20 Do you agree or disagree with that statement?

21 A. I totally disagree. Brunelle and
22 Crawford was a -- Brunelle was doing ink analysis
23 back in the 1960s and he's been retired for, I
24 don't know, 30 -- 25, 30 years. So their
25 assessment of GC/MS is based on very old

1 G. LaPorte - Confidential

2 technology.

3 In terms of Bugler, the method got a
4 little more perfected in terms of determining
5 that. I think a perfect example would be --
6 we've all had -- all of these people that you're
7 mentioning, if they worked in operational
8 laboratories you would see -- you do see
9 occasionally levels that are going to be very
10 high, depending on the ink, that are going to
11 be -- you know, more than four or five or
12 six months old.

13 Q. Are you familiar with the paper entitled
14 The Dating of Writing Inks Through
15 2-Phenoxyethanol Using Gas Chromatography-Mass
16 Spectrometry by Patricia Giebink, Erich Speckin,
17 Jason Harner?

18 A. One again, that's not peer reviewed
19 so --

20 Q. Is that the same paper we were talking
21 about earlier?

22 A. I don't know if it's the same paper but
23 I know they never published anything so...

24 MR. BERMAN: Toni, can you pull up the
25 document in the third e-mail I sent you,

1 G. LaPorte - Confidential

2 it's entitled At Six Years.

3 Q. Mr. LaPorte, I'm showing you an excerpt
4 from that paper -- the citation is actually
5 listed below the table. The banner at the top
6 was applied not by the paper, we added it on
7 there, just to be clear.

8 A. Yes, to confirm -- and I assume you know
9 that this is not from a publication -- a journal
10 publication.

11 Q. This is from another form of paper
12 prepared by scientists in your field, correct?

13 A. I'm going to politely say these people
14 are not qualified. They have no -- they haven't
15 proper training in this particular area.

16 Q. In your field isn't it true there are
17 very limited number of testifying experts on the
18 subject of ink dating?

19 A. Yes.

20 Q. Isn't Erich Speckin one of those
21 testifying experts?

22 A. He's a testifying expert but his
23 opinions have been criticized by courts all over
24 the world so I don't -- I know Mr. Speckin. This
25 data -- like there's no -- first of all, these

1 G. LaPorte - Confidential

2 are absolute measurements so I just -- there's no
3 data here review other than some numbers, which I
4 can tell you just looking at the numbers for
5 their concentrations, these are low level
6 concentrations for these inks.

7 Q. Okay. So you draw different conclusions
8 than these particular individuals did in this
9 paper?

10 A. No, I think that would be incorrect to
11 say that I draw conclusions. What I'm saying --
12 I wouldn't draw conclusions from this. This
13 isn't data.

14 Q. Okay. Are you familiar with the work of
15 Carina Maria Bello De Carvalho? There's a
16 paper -- there's a paper entitled Figures of
17 Merit Evaluation of GC/MS Method for
18 Quantification of 2-PE From Ballpoint Pen Ink
19 Lines and Determination of the Influence of
20 Support Paper on Solvent Extraction?

21 A. I'm not aware of that publication. Do
22 you have -- can you pull that one up?

23 Q. I believe I can. Hold on a second here.
24 Actually, I don't think that's one of my slides.
25 There's a statement in the paper where they took

1 G. LaPorte - Confidential

2 about the detection limits obtained for their
3 study and they talk about the limits of reliable
4 measures of 2-PE.

5 Are you familiar with papers discussing those
6 points?

7 A. I would have to see that paper and what
8 their limited detections are.

9 Q. I think we can probably -- you know
10 what, let's skip that one for now.

11 We talked earlier about Bugler and some other
12 authors, right?

13 There's another paper that I've seen by
14 Bugler, Buchner and Dallmayer, are you familiar
15 with their works?

16 A. Yes.

17 Q. They make a statement in that paper --
18 I'll read the quote, it says, quote, these
19 authors maintain the methods applied until now in
20 which a ratio is made between the amounts of PE
21 found in two samples of the same ink, one without
22 treating and another heated, may have significant
23 error due to possible variations in the two
24 samples removed from the same ink.

25 A. Yes, so the key is "up until now." So I

1 G. LaPorte - Confidential

2 worked with Dr. Bugler when I was in the Secret
3 Service, we worked together on some samples and
4 we worked with the Canada of Border Service
5 Agency. This is when we were trying to optimize
6 the sampling. One of the things that came from
7 that is when you take samples to do adjacent
8 samples, when you take them in pairs.

9 Q. Okay. There's a paper -- it's a paper
10 by Magdalena Ezcurra, we discussed previously,
11 Analytical Methods For Dating Modern Writing
12 Instrument Inks on Paper.

13 Are you familiar with that work?

14 A. I know her work. I would have to see
15 that paper.

16 Q. They're talking about the evaporation of
17 solvents in ink to achieve an approximation of
18 age of the ink. And there's a statement in there
19 that says, this method is based on publications
20 by Aginsky, 1996, and can be applied to determine
21 if an ink that contains PE as a solvent has been
22 entered on the paper in a period previous to a
23 year since the analysis is performed. Does that
24 sound familiar?

25 A. Yes. So once again, I mean, they say a

1 G. LaPorte - Confidential

2 year and this is what I explained earlier in my
3 testimony is that I use that two year limit to be
4 extremely conservative to minimize the potential
5 of a false positive. I mean, our goal -- at
6 least my goal -- I can speak for myself is I
7 never want to make an error. I never want to
8 have a false positive. I'm sure I can get it
9 wrong many times when I get a level that's below
10 25 -- I shouldn't say "get it wrong" but that's
11 an inconclusive level if you have, you know, of
12 course, like I explained like single digits but
13 that can never mean that it's generally -- that
14 the ink was generally done more than two years
15 ago. So we kind of -- you know, through all of
16 this research that you've been pointing out,
17 we -- to me the two year threshold or that two
18 year level just gives you a lot of security.

19 Q. Do you know whether either of the two
20 samples --

21 MR. BERMAN: Withdrawn.

22 Q. Do you know whether either of the two
23 documents that you reviewed, Q8 and Q12, do you
24 know whether either of them were on recycled
25 paper?

1 G. LaPorte - Confidential

2 A. Q8 was on -- I believe it was on notepad
3 paper so I don't know if it's recycled or not.
4 And Q12 was a printout I think from a printer. I
5 don't know if that was recycled paper either.

6 Q. Do you agree that recycled paper may
7 contain more PE-2?

8 A. No -- I test paper samples before I do
9 my testing. My paper samples didn't show any
10 2-PE. That's during the quality control process.

11 Q. So your blanks contained no PE at all?

12 A. Correct.

13 Q. Is that reflected in your report
14 somewhere?

15 A. It's certainly in my notes.

16 MR. BERMAN: Toni, can we show him the
17 slide in the third e-mail that's titled
18 "Recycled Paper May Have More PE-2."

19 Whatever documents we showed Mr. LaPorte
20 today -- so far we showed him his expert
21 report, which we had marked as Plaintiff's
22 Exhibit 1.

23 Was the last document we showed him --
24 the second document that we put up today?
25 Mark that as LaPorte Exhibit 2 and let's

1 G. LaPorte - Confidential

2 mark this one as LaPorte Exhibit 3, please.

3 (LaPorte Exhibit 2 and LaPorte Exhibit
4 3, marked for identification.)

5 Q. So are you familiar with this paper by
6 Carina Maria Bello De Carvalho?

7 A. Yes, I saw -- I'm vaguely familiar with
8 this one.

9 Q. And just to be clear, the green
10 highlighted material on the left, that's not part
11 of the paper. That was applied on our end.

12 A. Yes.

13 Q. So there's a highlighted line on the
14 right panel, do you see that where it says,
15 relating to the experiment's testing the
16 influence kind of paper on 2-PE concentrations,
17 it can be concluded that the kind of paper exerts
18 importance in the 2-PE quantification.

19 Do you see that statement?

20 A. Yes.

21 Q. Do you agree or disagree with that
22 statement?

23 A. So I disagree with the idea that this
24 would be applicable in my case. First of all, I
25 ran paper solvent -- I ran paper blanks so I,

1 G. LaPorte - Confidential

2 obviously, didn't get any 2-phenoxyethanol that
3 would be significant enough for me to stop my
4 testing.

5 But secondly, this is comparative
6 method -- this is a relative comparison. So if
7 I'm taking samples and analyzing those in doing
8 the heated and unheated and the paper is by
9 chance contaminated, I'm getting the same
10 contaminations on both samples so it does have an
11 effect.

12 The other thing is I don't know where
13 they got their paper from. I believe -- I don't
14 know where she is from -- I'm not sure if she's
15 actually from Spain or from South America but I
16 don't know where they got their paper from that
17 would show, you know, contamination of 2-PE. I
18 don't know how old their paper was -- how old was
19 the paper? Was it fresh out of the package? And
20 I don't know where it was manufactured. If it's
21 manufactured in a place where they have print ink
22 also or if the printing ink is coming through
23 from the wrapping that's labeled. There's a lot
24 of variables. I'm a little speculative about
25 this statement.

1 G. LaPorte - Confidential

2 And then also too, I will say this has
3 to do with measuring absolute values of
4 2-phenoxyethanol. I haven't seen any of their
5 data that they ran in their laboratory. Did they
6 run blanks on the GC/MS? Is this contamination
7 from the GC/MS or is this really truly from the
8 paper. So I have a lot of questions about this.

9 Q. You seem to be inferring this paper is
10 about contamination, am I misunderstanding?

11 A. No, it's about what it seems to be about
12 is that if you test recycled paper you can get
13 2-PE. What I'm saying is it could be
14 contamination in the samples that they ran. I
15 don't know that.

16 Q. Okay. If you look at the last sentence
17 on the right panel it says, in part, recycled
18 paper will become a routine paper in offices and
19 the aging behavior of pen inks in this kind of
20 paper should be studied. Do you see that
21 sentence?

22 A. Yes, I see the sentence.

23 Q. So doesn't that indicate that they're
24 talking about the aging behavior of pen inks
25 rather than contamination?

1 G. LaPorte - Confidential

2 A. No, it sounds like they detected 2-PE in
3 the paper. All I'm say is I'm not privy to all
4 of their data and how they did their analysis and
5 whether that 2-PE is truly in the paper. You
6 would have to show me that the paper industry is
7 using 2-PE in their paper production. And these
8 don't seem like significant levels.

9 Q. I want to draw a distinction for you
10 between two different concepts.

11 The first concept being the one you've
12 identified, which is whether there is 2-PE in the
13 paper itself, right? Let's call that concept
14 one.

15 Concept two would be whether the tape of
16 paper that the ink is on affects the aging
17 behavior of that ink.

18 Do you understand the differentiation between
19 those two concepts?

20 A. Concept two depends on concept one.

21 Q. Well --

22 A. What they're suggesting, right, is that
23 the paper contaminated and we should do more
24 studies to understand the aging characteristics
25 of the ink. What I'm saying is I don't know if

1 G. LaPorte - Confidential

2 concept one is actually -- you know, if that's
3 feasible to begin with.

4 How many pieces of paper did they test?
5 Did they confirm with manufacturer this paper has
6 2-phenoxyethanol somewhere in the manufacturing
7 process. That's what I would want to know.

8 Q. I think I understand your response on
9 that point.

10 What I'm asking you is something a little bit
11 different, which is if you have recycled paper
12 that does not contain any 2-PE of its own, can
13 that fact that there's recycled paper affect the
14 aging behavior of pen ink applied to that paper?

15 A. If anything, I think I said this two or
16 three times already, but it wouldn't be expected
17 to make inks stay fresh for more than two years.
18 Are there differences in paper? Absolutely, I've
19 already -- you know, I've already testified to
20 that, that there are going to be differences in
21 paper and how inks dry on those papers. I'm not
22 debating that at all. But is there any evidence
23 that -- is there going to be any scientific study
24 that shows that a certain paper will cause an ink
25 not to dry, I'm not aware of that.

1 G. LaPorte - Confidential

2 Q. Okay. Do you agree that samples may be
3 contaminated through solvent migration?

4 A. So solvent migration is where you have
5 writing and that can contaminate sort of the
6 paper around the writing.

7 Now, when I did my testing I removed
8 paper blank samples from around the writing to
9 determine whether there was any significant
10 contamination. I didn't -- I certainly didn't
11 detect that.

12 Q. Well, can samples be contaminated
13 through any other means?

14 A. They could if you had other pieces of
15 paper, you know, put on top of them, sure. But
16 once again, we're do a comparison of the unheated
17 and the heated. So the idea of cross
18 contamination with an unheated and heated when
19 I've done -- when I've actually performed testing
20 on the paper that's adjacent to where I do the
21 sampling, then that -- that's not likely in this
22 particular case. And I would say like almost
23 impossible in this particular case.

24 Q. Do you agree or disagree that
25 contamination can occur from other sources of

1 G. LaPorte - Confidential

2 2-PE in the environment where the document is
3 stored?

4 A. No, not the way you stated that. No, I
5 don't agree.

6 Q. And what is about the way I stated that
7 makes it more or less agreeable?

8 A. You said "in the environment," what does
9 that mean?

10 Q. So for example, don't other common
11 household products contain 2-PE?

12 MS. PRIMAVERA: Objection.

13 A. So that's possible. I published a paper
14 on this and that -- you know, there are clones an
15 perfumes and things like that that can contain
16 2-PE. But that's why we do paper blank samples
17 to determine whether that's possible -- the
18 possible case.

19 Q. Okay. Does solvent loss ratio decrease
20 uniformly with the age of a document?

21 A. No, not -- so it depends on how you
22 define uniformly. But the way I understand
23 uniformly, no.

24 Q. Is it sometimes the case that solvent
25 loss ratio may increase over longer periods of

1 G. LaPorte - Confidential

2 time?

3 A. I've never read that. I've never heard
4 of that.

5 Q. Are you familiar with the work Agnes
6 Koenig, Sophie Magnolone aging and Celine
7 Weyermann, Comparative Study of Ballpoint Ink
8 Aging Parameters Using GC/MS?

9 A. I would have to see the reference. I
10 mean, I'm familiar with those authors but I would
11 have to see this reference that you're -- that
12 you're referencing.

13 Q. Well, if solvent loss ratio isn't
14 uniform over time, right, and you're taking a
15 ratio of a heated and unheated sample, then the
16 ratio of change for the heated sample versus the
17 unheated sample can change as the shape of the
18 curve changes, right?

19 MS. PRIMAVERA: Objection.

20 A. Not necessarily. I mean, there can
21 certainly be -- you know, there can be what I
22 would call measurement error and variation. But
23 it depends on how many measurements you're taking
24 and how often you're sampling or what the
25 difference is in the sampling. But the idea that

1 G. LaPorte - Confidential

2 2-PE -- the solvent loss ratio would actually
3 rise or increase over time makes it -- it
4 logically, scientifically doesn't make any sense.

5 Q. Well, it would be inconsistent with the
6 theory that you described with the fresh ink
7 showing a higher loss ratio, right?

8 MS. PRIMAVERA: Objection.

9 A. It depends if we're taking those samples
10 from exactly the same place, which would get very
11 difficult as you're doing this. No, that just
12 doesn't make any sense to me. And I haven't see
13 any research that would suggest that solvent loss
14 ratios increase over time as a function of the
15 ink.

16 Q. But there this paper that I referenced
17 by Koenig, Magnolon and Weyermann; have you
18 reviewed that paper?

19 A. No, I would have to see what you're
20 referencing. I would have to review what
21 they're -- exactly what they're stating and how
22 they measured that.

23 Q. Okay. Are you familiar with a paper by
24 El-Sabbah, also by Gomaa and El-Hefny and
25 Al-Hawary, Dating the Ballpoint Pen Ink Using Gas

1 G. LaPorte - Confidential

2 Chromatography-Mass Spectrometry Technique?

3 A. I'm not sure I'm aware of that paper. I
4 would have to see it.

5 Q. Okay.

6 A. And maybe read the abstract on whether
7 -- I can't recall -- I can tell you right now I
8 can't recall that paper.

9 Q. All right.

10 MR. BERMAN: Just a moment please. I
11 might have a slide -- yeah.

12 Toni, can you show him the slide labeled
13 Inks Have Widely Varying -- and it continues
14 on from there. Let's label this please.

15 (LaPorte Exhibit 4, marked for
16 identification.)

17 THE WITNESS: Can we take a five-minute
18 break?

19 MR. BERMAN: Absolutely.

20 (Whereupon, a brief recess was taken.)

21 Q. Mr. LaPorte, I am showing you an exhibit
22 that's marked LaPorte Exhibit 4. Again, the
23 information on the left hand panel, we applied
24 that, that's not part of the underlying material,
25 okay, just to be clear.

1 G. LaPorte - Confidential

2 This is a slide that contains information
3 from that paper listed below the graphics, right,
4 where it says figure seven. This is from that
5 paper Dating Ballpoint Pain Ink Using Gas
6 Chromatography.

7 Have you seen graphs of nature before?

8 A. I have, yes.

9 Q. It's a little bit small but I'll
10 represent to you, for example, that on the top
11 left panel marked A there's an inset there says
12 the BIC pen at 24 degrees C and underneath that
13 it says BIC pen and 70 degrees C. Can you see
14 that?

15 A. I can't see that, no.

16 MR. BERMAN: Can you blow this up
17 larger, Toni, so that the graphs are more
18 visible?

19 Q. Are you familiar with the paper this is
20 excerpted from?

21 A. No. Once again, I think I would have to
22 see the front of the paper and then the abstract.

23 Q. Okay. My understanding is that in these
24 charts the top line is black and the bottom line
25 is red. Do you see that?

1 G. LaPorte - Confidential

2 A. Yes.

3 Q. Okay. And that the black line
4 represents an unheated sample and the red line
5 represents a heated sample?

6 A. Yes.

7 Q. And then this appears to have on the X
8 axis time. Are you familiar with what the right
9 axis is showing us?

10 A. First of all, what is the -- the X axis
11 timing what?

12 Q. Let me see if I can discern that. In
13 months.

14 A. What are those numbers on the bottom?

15 Q. It appears to range from negative 5 to
16 40, depending upon the chart. So some of them go
17 from negative five to thirty. For example, panel
18 A goes from negative 5 to 35 months on the X axis
19 whereas panel -- I lost my place.

20 A. What is negative five in time?

21 Q. I think it's just -- there's no such
22 thing but you, obviously, can't have negative
23 months but I think it's just, you know, your
24 transposing the start points a little further to
25 the right on the chart?

1 G. LaPorte - Confidential

2 MS. GUERON: I want to object to this
3 entire line of questioning because none of
4 us can even read this document. I just
5 don't think it's appropriate. I understand
6 technology makes things hard. I can't let
7 this questioning go un-objected because I
8 can't even see what we're talking about.

9 MR. BERMAN: Let's take a moment to
10 remedy that. Hold on a second.

11 (Whereupon, a brief recess was taken.)

12 MR. BERMAN: Let's mark this as LaPorte
13 Exhibit 5.

14 (LaPorte Exhibit 5, marked for
15 identification.)

16 MR. BERMAN: Please allow Mr. LaPorte to
17 guide you to the portions that he would like
18 to look at.

19 Q. The chart I would like to look at when
20 you're ready is on page 393.

21 A. Can I just sort of caveat this up in the
22 front. None of these people are forensic
23 chemists's. It's coming from the agriculture
24 department and these people are not experienced
25 in this methodology. So I am just going to put

1 G. LaPorte - Confidential

2 that on the record right now.

3 I'm sorry, is the ball in my court right
4 now or --

5 Q. Yes, Mr. LaPorte, you indicated you
6 wanted to review the abstract and other portions
7 of the paper.

8 A. Yes, can we see the graphic now?

9 Q. Yes, the graphic is on page 393.

10 MR. BERMAN: Please feel free to guide
11 the court reporter to any portions you want
12 to review first and when you're ready for
13 the chart, we can have her flip to that
14 page.

15 THE WITNESS: Can we just scroll down to
16 the next paragraph after this. Can we go to
17 the methods section real quickly?

18 MR. BERMAN: Where is that? Can you
19 scroll down?

20 THE WITNESS: Scroll down. There we go.

21 A. So I will just say that a lot of this
22 isn't going to be applicable because they removed
23 their samples with a scalpel. As you can see in
24 the artificial aging part they say two one
25 centimeter samples of the examining inks on paper

1 G. LaPorte - Confidential

2 are removed using a sharp scalpel. That's not a
3 generally accepted method for analyzing inks
4 because we do the hole punches. So you'll create
5 a lot of variation in your data when you're
6 cutting and excising lines off the paper plus
7 you're removing too much paper at the same time
8 as well too.

9 THE WITNESS: Can we go ahead and scroll
10 down I guess to the graphs. That would
11 probably in the result section I assume,
12 which should be up next.

13 MR. BERMAN: The graphs are on page 393.

14 A. So now I can see the graphs. Do you
15 have a question now?

16 Q. So, again, just turning to panel A you
17 can see there's a black line, which they have in
18 the inset of the panel described as a BIC pen at
19 24 degrees C and underneath there's a red dash
20 line, BIC pen at 70 degrees C; do you see that?

21 A. Yes.

22 Q. Now you can see the X and Y where the X
23 is time in months and the Y axis is abundance in
24 it looks like N-G, does that make sense?

25 A. Nanograms.

1 G. LaPorte - Confidential

2 Q. In the different panels here we have
3 what appears to be different inks that are used.
4 So, for example, panel C is the Staedler pen at
5 24 degrees C and at 70 degrees C, right?

6 A. Yes.

7 Q. So, for example, in panel A, are you
8 able to tell me what the black curve -- the black
9 line curve represents?

10 A. Well, I mean first of all we have some
11 data here with 24 degrees Celsius and that's
12 about 75 degrees Celsius. That's typically above
13 what you expect room temperature. The other
14 thing is I don't know how the -- well, I
15 mentioned this already, that they excise the
16 sample by removing these, you know, strips of
17 ink, which to me is just kind ruins the whole
18 experiment. And then also too -- I mean, I --
19 so -- think about it this way, if you're removing
20 one centimeter of ink -- like the whole line, how
21 can that be consistent because you would be
22 taking one centimeter and then measuring that and
23 then taking another centimeter and then heating
24 that and measuring it. The other thing is I
25 don't know how they heat their samples and that

1 G. LaPorte - Confidential

2 can be important in the process. But you're not
3 going to have consistency between heated and
4 unheated if you're separating everything by a
5 full centimeter. That's a lot of distance in an
6 ink.

7 Q. Have you completed your response?

8 A. Yes.

9 Q. So with understanding that you have
10 certain critiques of their methodology, right, do
11 these panels generally reflect different
12 curvatures for the abundance of PE over time in
13 different ink types?

14 MS. GUERON: Objection.

15 A. I mean, I would say sort of generally
16 speaking, you know, these curves are -- they're
17 not a big surprise. But, of course, if you're
18 not doing the methodology properly then you're
19 going to see some variances in those curves that
20 can really cause a lot of distortion in the
21 curve.

22 But, generally speaking, the idea of the
23 curve starting at high and coming down low is
24 what you would expect as an ink ages.

25 Q. Have you completed your response?

1 G. LaPorte - Confidential

2 A. Yes, sir.

3 Q. I'll direct your attention to panel C,
4 the red line which reflects a Staedler pen 70
5 degree; do you see that?

6 A. Yes.

7 Q. Do you see the curvature starts
8 increasing after a certain point in time where
9 the curve actually from 25 months onward goes up?

10 A. The ratio actually gets smaller as you
11 see the red comes closer to the black so the
12 difference is going to be smaller as it gets
13 older, yes.

14 Q. Contrast that against panel F, right?
15 In panel F we see the opposite, don't we, where
16 the divergence between the two increases over
17 time?

18 A. I can't see F.

19 MR. BERMAN: Can you scroll down,
20 please, Toni. Panel F reflecting the Luxor
21 pen at 24 degrees and 70 degrees.

22 A. Like I said, I wouldn't trust this data
23 per se. I'm okay with the general curve but I
24 don't trust the data. And then also we don't
25 know if that variance is less than 25 percent or

1 G. LaPorte - Confidential

2 more than 25 percent.

3 Q. Okay. Are there other materials in the
4 scientific field that show divergences of the
5 heated and unheated samples increasing over time?

6 A. I'm not aware of that. If it's done
7 using the same methodology that I'm using. You
8 know, you're not excising one centimeter lines,
9 you're using hole punches, you're taking adjacent
10 samples, all that. I haven't seen anything like
11 that.

12 Q. Okay. Prior to today have you seen this
13 paper?

14 A. I don't -- you know, I don't recall this
15 paper.

16 Q. So you're not sure but you're not
17 familiar with it independently of me showing it
18 to you now?

19 A. Once again, I don't -- I don't recall.
20 I don't recall this paper. Can we go back up to
21 front to see where it was published?

22 Q. Yes, you can. It was Egyptian Journal
23 of Chemistry.

24 A. Yeah, that's not a journal that I
25 typically read. But I do peer reviews and I want

1 G. LaPorte - Confidential

2 to be careful that I don't disclose anything I
3 shouldn't be. But I do peer reviews for a lot of
4 different journals on these types of articles. I
5 haven't -- I don't recall seeing this.

6 Q. Okay. Did I understand you to be
7 telling me the Egyptian Journal of Chemistry is
8 not peer reviewed?

9 A. No, no. I'm saying I do peer reviews.
10 I get called by a lot of journals to do peer
11 reviews for them.

12 Q. Okay.

13 A. But this one, no, I'm not aware of this.
14 I don't know if I just saw the article and I
15 don't recall or -- I think it's easier for me to
16 say I just don't remember seeing this.

17 Q. That's fine.

18 MR. BERMAN: You can put this one down,
19 Toni.

20 Q. You mentioned that you do peer reviews.
21 When was the last time that you were published in
22 a peer review study?

23 A. I'm sorry, the last time I published?

24 Q. Yes, in a peer review study.

25 A. I would say the last time would be --

1 G. LaPorte - Confidential

2 well, I wrote a chapter in a textbook. I don't
3 remember when that was published. I don't
4 remember specifically. I would have to look it
5 up.

6 Q. Okay. Is that the same chapter you
7 referenced earlier?

8 A. Yes.

9 Q. Okay. Are you aware of any studies
10 examining the uptake rate of PE-2 by ink as
11 opposed to paper?

12 A. (No verbal response.)

13 Q. Is my question clear? I can rephrase
14 it.

15 A. No, it's not clear.

16 Q. Okay. So before we were talking about
17 potential sources of contamination from the
18 environment that the document was stored in.

19 Do you recall some questioning on that
20 subject matter?

21 A. Yes.

22 Q. We had a discussion how you take hole
23 punches from both the portion of the paper that
24 has the ink on it as well as the portion of that
25 is blank, right?

1 G. LaPorte - Confidential

2 A. Yes.

3 Q. And the rationale for doing that is, at
4 least in part, to control for possible
5 environmental contamination, right?

6 A. Yeah, to understand if there was some
7 potential contamination that could affect your
8 results?

9 Q. So just in taking an extreme example, if
10 someone spilled some perfume with PE-2 on a
11 document, you would expect it to be reflected on
12 the blank if it had happened as well as on the
13 ink portion, right?

14 A. Correct.

15 Q. So, obviously, moving away from that
16 extreme example, in a case where -- in a
17 situation where there was PE-2 in the environment
18 but perhaps is it -- do you know whether PE-2 can
19 be carried in the air?

20 A. So although it's a volatile organic
21 compound that typically implies it volatiles
22 pretty quickly once it hits the air. That's
23 speculative I would say, that question. But I
24 can't imagine that 2-PE is floating around in the
25 area very much.

1 G. LaPorte - Confidential

2 Q. Okay. Obviously, in like a
3 well-ventilated room or something like that it
4 would never be expected to happen.

5 But what about like in a closed desk you
6 draw?

7 MS. PRIMAVERA: Objection.

8 MS. GUERON: Objection.

9 A. I mean, that just wouldn't make sense to
10 me. And then it like suddenly lands on the ink?

11 Q. Well, are you aware of any studies that
12 have assessed whether there's any difference
13 between the absorption of environmental
14 contaminated PE-2 by ink versus that of paper?

15 A. No.

16 Q. Okay. Are you aware of any studies
17 finding the solvent loss ratio becoming less
18 stable in older documents?

19 A. What does "older" mean?

20 Q. Well, there's a document by Koenig,
21 Magnolon and Weyermann entitled A Comparative
22 Study of Ballpoint Ink Aging Parameters Using
23 GC/MS, are you generally familiar with that?

24 A. Yes.

25 Q. And in that document's abstract they

1 G. LaPorte - Confidential

2 make a statement that for many -- excuse me --
3 for more than a decade scientists try to develop
4 methods capable of dating ink by monitoring the
5 loss of PE over time while many methods were
6 proposed in the literature, few were really used
7 to solve practical cases and they still raise
8 much concern within the scientific community.

9 Do you agree or disagree with that statement?

10 A. I would say I partially disagree with
11 that statement.

12 Q. Okay. Later on in the abstract -- would
13 you like to clarify for me which portion you
14 disagree with?

15 A. I would have to understand a little bit
16 more about exactly what they're saying. What
17 they don't come to a conclusion is that a solvent
18 loss ratio above 25 percent will occur in a
19 document that's greater than two years old. That
20 I know is not said in there.

21 Q. There's a statement in the abstract
22 says, surprisingly our results showed that our
23 percentage was not the most reliable parameter,
24 as it showed the highest standard deviation.

25 Do you agree or disagree with that statement?

1 G. LaPorte - Confidential

2 A. It depends on what they mean, do they
3 mean over time as a predictor of age?

4 Q. Are you -- would you need to see the
5 paper to know that or are you familiar with the
6 work?

7 A. I'm fairly familiar with the work. It
8 has nothing -- it does not imply that the solvent
9 lost ratio increases above 25 percent when a
10 document is over two years old. It may fluctuate
11 in between but it's not going to have something
12 to do with the measurements the way it's being
13 taken. I'm not sure if they used hole punches or
14 if they extracted with a scalpel.

15 Q. Well, are you familiar with Weyermann?

16 A. Yes.

17 Q. Isn't she a forensic criminologist?

18 A. No, she's a researcher.

19 Q. This particular article was published
20 in -- University de Lausanne?

21 A. Lausanne.

22 Q. Isn't that a criminal forensic school?

23 A. They have criminal lists there but
24 Dr. Weyermann does not -- as far as I know she
25 doesn't engage in operational -- she doesn't work

1 G. LaPorte - Confidential

2 in an operational laboratory, she's a researcher.

3 Q. Are you familiar with Forensic Science
4 International?

5 A. Yes.

6 Q. Is that a well-regarded scientific
7 publication?

8 MS. PRIMAVERA: Objection.

9 A. I don't know if I call it well-regarded
10 in a sense -- it depends on what the article is.
11 Are there articles that are published in there
12 that I agree with, yes. Are there articles that
13 published in there that I think that are not
14 great science, yes.

15 Q. Do you know if works in that publication
16 are peer reviewed?

17 A. I believe so, yes.

18 Q. You're not contending that this article
19 is not peer reviewed, right?

20 A. No, I'm not contending that.

21 Q. All right. Are you familiar -- never
22 mind -- we already asked about this paper.

23 Are you familiar with a 2017 work in Science
24 and Justice also by Agnes Koenig, Celine
25 Weyermann entitled Ink Dating Part II

1 G. LaPorte - Confidential

2 Interpretation of Results in a Legal Perspective?

3 A. I am familiar with that, yes.

4 Q. Are you aware that that article
5 discusses the use of a 50 percent threshold?

6 A. Not for two years.

7 Q. Okay. Are you aware of studies
8 reporting false/positive results for the R
9 percentage parameter?

10 A. So false/positive in what terms? Did
11 they conclude that a document was less than two
12 years old when it was factually more than two
13 years old? I'm not aware of that.

14 Q. Let me give you a quote from the paper.
15 It says, thus, two values of 38 and 35 percent
16 were reported for two different seven year old
17 samples yielding false/positive results when
18 using the 35 percent threshold less than
19 18 months?

20 A. I'm not aware of that. Do you have that
21 study? I would like to see how they did their
22 testing.

23 Q. So you're not generally familiar with
24 that paper?

25 MS. PRIMAVERA: Objection.

1 G. LaPorte - Confidential

2 A. I don't -- is it peer reviewed and
3 published?

4 Q. It's published in Science and Justice
5 2017. Do you know whether that is peer reviewed?

6 A. I don't know but -- I'm not going to
7 contend that it is or isn't. I would like to see
8 that article and understand exactly how they did
9 their testing.

10 Q. Okay. So without more information you
11 can't tell me whether you agree or disagree,
12 correct?

13 A. Correct.

14 Q. Is there any pear reviewed publication
15 that reports that after 24 months PE no longer
16 evaporates at a significant or measurable rate?

17 A. There is a publication, yes, that
18 essentially says that. Yes.

19 Q. What publication is that?

20 A. Gaudreau and Brazeau.

21 Q. Do you know what date or what
22 approximate year that came out?

23 A. I don't remember the year. It would
24 have been sometime in the early to mid 2000s.

25 Q. Do you know of any other papers that

1 G. LaPorte - Confidential

2 come to that conclusion?

3 A. I think there's a lot of papers that it
4 may be in there. It may be in the paper
5 somewhere but it's not necessarily part of the
6 hypothesis of the testing, they'll use it as
7 foundational.

8 Q. When you -- when you tell me they use it
9 as foundational, what does that mean?

10 A. It means that's not what the testing is
11 all about. I mean, that's not -- the test
12 that -- those are more -- that's more informative
13 information that's been developed over the years.

14 So when you say is there research to
15 show that, somebody probably wasn't doing that
16 research. But I would say, generally, that's a
17 fairly accurate statement.

18 Q. In your report you make the statement
19 after 24 months PE no longer evaporates at a
20 significant or measurable rate and you don't cite
21 any scientific work for that proposition?

22 A. That's Gaudreau and Brazeau and I
23 believe I have a publication that states the same
24 thing too.

25 Q. When you say you have a publication,

1 G. LaPorte - Confidential

2 what do you mean by that?

3 A. I have a publication that states that
4 same thing that I cite Gaudreau and Brazeau from
5 it.

6 Q. When you say you have a publication,
7 does that mean you have a copy of a publication
8 authored by some other author or you wrote one?

9 A. No, I authored it.

10 Q. You wrote a study where you came to this
11 conclusion?

12 A. Like I said, it's general but, yes -- so
13 it's a general agreement that really after
14 24 months these inks are completely dried out
15 unless they were stored in some irregular
16 environment.

17 Q. So the manifestation of that general
18 agreement would be the Gaudreau article you
19 referenced?

20 A. That's where it starts. And then
21 there's -- like I said, there's more articles
22 that when show -- when you seize the data that it
23 coincides with the data. I'm not aware of any
24 publication that has debunked that idea.

25 Q. In your report -- I think I asked you

1 G. LaPorte - Confidential

2 about this -- excuse me, let me just go down.

3 In that in an article by Weyermann, Almog and
4 Bugler and Cantu in Forensic Science
5 International, 2011, they make the statement, to
6 present date no two laboratories that do ink
7 dating via solvent analysis use the same method.

8 Do you agree or disagreement with that
9 statement?

10 A. That was 2011. So I don't know -- I
11 can't comment on whether laboratories have come
12 together. I do know that there are always
13 some -- you know, this is not uncommon in just
14 about any chemical analysis where there might be
15 some differences -- some variations in the
16 methodology.

17 Q. Am I correct that you agree that there
18 are some variations in methodology from lab to
19 lab?

20 A. I don't -- I can't say for sure. I
21 don't know what every lab is doing. I know what
22 I do and I know that I validated my own procedure
23 and I've used -- I know there are other ink
24 chemists that -- other test finding ink chemists
25 that use something similar.

1 G. LaPorte - Confidential

2 Q. Are there other ink chemists that are
3 testifying at experts that you can consider to be
4 at your level?

5 A. I don't know what you mean by "at my
6 level."

7 Q. I asked you earlier about, for example,
8 a paper written by Erich Speckin, remember that?

9 A. Yes.

10 Q. And effectively you told me you didn't
11 consider him qualified, correct?

12 A. No, that's -- I mean, I wouldn't want to
13 characterize it as not qualified, that's not my
14 job as an expert when you say "not qualified."
15 The paper we were talking about was not peer
16 reviewed. There's no data to sort of back it up.
17 It was a paper that was based on making absolute
18 measurements.

19 Q. Let me try to frame it as a more
20 objective question to make it perhaps easier and
21 more clear.

22 Your testimony as a forensic ink dating
23 expert has been accepted in federal courts in the
24 US, correct?

25 A. Yes.

1 G. LaPorte - Confidential

2 Q. How many other experts in the same
3 subject matter are you aware of whose testimony
4 has been accepted as expert testimony in federal
5 courts in the US?

6 A. I don't think -- I mean, I can't -- I
7 can't comment on that because I don't know for
8 certain on whether or not their testimony has
9 been accepted in Federal Court.

10 Q. Do you know whether Mr. Speckin's
11 testimony has been accepted in Federal Court?

12 A. I actually don't know that for sure.

13 Q. Do you know whether Dr. Aginsky's
14 testimony has been accepted in Federal Court?

15 A. I don't know for sure. I would -- my
16 guess is yes.

17 Q. Are you familiar with a forensic ink
18 dating scientists named Lyter, L-Y-T-E-R?

19 A. Yes.

20 Q. Do you me know his first name?

21 A. Albert.

22 Q. Yes. Do you know whether his testimony
23 has been accepted as expert testimony in the US?

24 A. I can tell you I was involved on the
25 opposing side of that case in the Souther

1 G. LaPorte - Confidential

2 District of New York where -- if you read that --
3 if you read that ruling clearly, there were he
4 lacked quality control procedures and there were
5 other things that made the analysis unreliable
6 but the method itself -- I don't -- I don't
7 recall specifically if there was an issue with
8 just the method itself other than he forgot --
9 not forget -- he neglected to run quality control
10 samples and some other things. But -- so I'm
11 going to leave it at that.

12 Q. Your referring to the case where his
13 testimony was discredited because he didn't take
14 the blank paper samples, right?

15 A. Correct.

16 Q. So other than yourself, are you aware of
17 any forensic ink dating experts whose testimony
18 has been credited as expert testimony in Federal
19 Courts in the US?

20 A. Well, once again, I mean, I don't keep
21 track of other experts and their testimony and
22 whether it's been accepted or not. Sometimes it
23 may not even involve ink dating. So I don't
24 know. He would probably be -- you can probably
25 get that information a lot easier than me.

1 G. LaPorte - Confidential

2 Q. Thank you. Is there a standard formula
3 for ballpoint pen manufacturing for the ink
4 that's used?

5 A. I'm sorry, I don't understand the
6 question you're asking.

7 Q. Let me phrase it differently. Do the
8 solvents used in commonly available inks vary?

9 A. Yes.

10 Q. Do the dyes vary?

11 A. Yes.

12 Q. Do the resins vary?

13 A. Yes, but not a lot.

14 Q. Okay. And they vary from brand to
15 brand?

16 A. They can.

17 Q. And they can vary from region to region?

18 A. I don't know if I use a region to region
19 if it's the same manufacturer. They may -- it
20 depends on -- let's say you sell -- BIC sells
21 pens in Arizona that's a dry climate versus a
22 highly humid climate, the company may sort of
23 alter their solvents in those but I don't know
24 that for sure.

25 Q. Are you familiar with Brazilian Journal

1 G. LaPorte - Confidential

2 of Forensic Science Medical Law and Bioethics?

3 A. I am not.

4 Q. In the paper they published in January
5 of 2017 they stated that solvents, dyes and
6 resins may vary between different brands of pens
7 and may vary from region to region.

8 Do you agree or disagree with that?

9 A. I don't have a basis to disagree with
10 that.

11 Q. Okay.

12 A. I would want to know where they got
13 their information from but.

14 Q. In your analysis of the Q8 or Q12
15 document, for either document, were you able to
16 identify the formula for the inks used in those
17 documents?

18 A. I did not identify the formula
19 specifically.

20 Q. Are you familiar with an Excurra paper
21 written with coauthors entitled Analytical
22 Methods For Dating Modern Writing Instrument Inks
23 on Paper in 2010 in Forensic Science
24 International?

25 A. I believe I have seen that article.

1 G. LaPorte - Confidential

2 Q. In that article they're talking about a
3 Gaudreau, Brazeau article -- Gaudreau is
4 G-A-U-D-R-E-A-U and Brazeau is B-R-A-Z-E-A-U.

5 Are those the authors you referenced earlier
6 today?

7 A. Yes.

8 Q. There's a statement in that article that
9 says, "Nowhere throughout the cited article are
10 the volatile compounds corresponding to the
11 analyzed peaks A and B specified. However, in
12 the bibliography below, so much LaPorte's,
13 L-A-P-O-R-T-E, as Gaudreau-Brazeau indicated
14 phenoxyethanol PE as one of the volatile
15 compounds to which Stewart refers,
16 S-T-E-W-A-R-T -- it continues on -- I'm not
17 breaking up the quote -- this method has two
18 clear limitations: First, that the formula of
19 the problem ink needs to be identified and obtain
20 information on its volatile compounds through the
21 industry; second, the importance of storage
22 conditions of both inks. Known and questioned
23 inks cannot differ if a comparison is intended."

24 Do you agree or disagree with the material in
25 that quotation?

1 G. LaPorte - Confidential

2 A. I disagree with that.

3 Q. Which part or parts do you disagree
4 with?

5 A. I disagree with the idea you need to
6 know the formula.

7 First of all, it sounds like you've done
8 some reading on this but this method is called
9 the dynamic method and the dynamic method has
10 nothing to do with ink formulation, right, it's
11 all about looking how an ink ages. Esthetic
12 methods, as we commonly refer to it, that has
13 more to do with ink formulation. This is ink
14 formulation independent.

15 Now, in part, I do agree that certainly
16 different inks are going to have different
17 characteristics and they all age different. It
18 will be really helpful to know a little bit more
19 about when ink formulation in its solvent content
20 levels originally but that's almost impossible.
21 You would have to get all that information from
22 the ink manufacturer and then they have to
23 disclose all the ingredients that they used and
24 that's just not going to happen.

25 Aside from that, it's -- this is why and

1 G. LaPorte - Confidential

2 this is the whole purpose and everything I think
3 you've been talking about sort of drives my point
4 home that I said in the beginning, which is this
5 idea of using the two year threshold and there
6 will be inks that are going to vary within those
7 two years, there's no doubt. So when you use the
8 two year threshold that's a lot more -- you have
9 a lot more confidence in that because once we
10 start, if you will, metaphorically splitting the
11 hairs thinner and thinner here then there's a
12 greater chance of making an inaccurate
13 conclusion. So two years is always a nice --
14 nice to stay with.

15 So it's like if you were shooting at a
16 target, right, and we use this analogy all the
17 time in chemistry when you're talk about accuracy
18 and precision, right, if you're shooting at a
19 target, two years is a much bigger target so you
20 have a better chance of hitting the target.

21 So I disagree, once again, with the idea
22 that you have to know the ink formulation. But I
23 don't disagree with the idea that knowing the ink
24 formulation will be great but that will also help
25 you in situations when you get levels that are

1 G. LaPorte - Confidential

2 below 25 percent to maybe make conclusions that
3 way as opposed to an inconclusive.

4 Q. Okay. Have you completed your response?

5 A. Yes.

6 Q. Do I understand correctly you disagree
7 with both of these conclusions; number one, the
8 formula of the problem ink needs to be identified
9 and number two, the importance of storage
10 conditions of both inks?

11 A. No, I don't disagree with two. So
12 storage condition, yes. There are what I would
13 sort of qualify more as extreme storage
14 conditions. Is there a difference between
15 storage condition of, you know, in an office
16 versus in a house, no. I would get, you know,
17 68 degrees versus 70 degrees or 71 degrees, no,
18 that's not going to be a big difference. So it's
19 as you get more drastic and the extreme.

20 Q. I asked you before about articles in
21 Forensic Science International.

22 There's another one by Weyermann, Minimum
23 Requirements For Application of Ink Dating
24 Methods Based on Solvent Analysis in Case Work.

25 There's a statement in that article that

1 G. LaPorte - Confidential

2 says, "The influence of the initial ink
3 composition on the aging rates of inks is very
4 important. Two aspects must be considered: The
5 compounds (dyes, resins, solvents and additives)
6 and their relative amounts (initial solvent
7 quantity in the ink formulation). Bugler et al
8 actually suggested that the types of resins
9 influenced the aging rates as they observed the
10 presence of acetophenone-formaldehyde-resin in
11 'slowly aging inks'".

12 Did you follow me on that?

13 A. I know exactly what you're saying and
14 I'm very familiar with that.

15 Q. Do you agree --

16 A. I'm very familiar with Bugler in that
17 chart that he's referring to with the resins.

18 Q. So this article is pointing to work by
19 Bugler but the article itself I'm asking about is
20 a Weyermann article, are you with me on that?

21 A. Yes.

22 Q. Do you agree or disagree with in the
23 statements in the Weyermann article that I just
24 read?

25 A. I agree, generally, with what she's

1 G. LaPorte - Confidential

2 saying, that the resins are important. One of
3 the reasons is that Bugler showed that certain
4 resins will cause inks -- potentially cause inks
5 to be fast aging. So they will age out within
6 three, four months.

7 Q. Previously you worked in government
8 forensic labs, is that right?

9 A. Yes.

10 Q. Did any of those labs maintain a
11 database of inks?

12 A. Yes.

13 Q. How many of the organizations you've
14 worked for maintain databases of ink?

15 A. When I worked at the Secret Service.
16 It's the only US lab that actually maintains a
17 collection in collaboration with the Internal
18 Revenue Service lab.

19 Q. Approximately how many inks were in the
20 database at the time you last worked there?

21 A. 11, 12,000 maybe.

22 Q. Each of those inks will have different
23 aging characteristics, correct?

24 A. Through that two year period, yes. Once
25 you get to the two year period, they're all

1 G. LaPorte - Confidential

2 generally going to -- everything will come
3 together about the same.

4 Q. Are you familiar with the Koenig
5 paper -- Agnes Koenig, Ink Dating Part I,
6 Statistical Distribution of Selected Aging
7 Parameters in a Ballpoint Ink's Reference
8 Population?

9 A. Yes.

10 Q. There's a statement in that paper, "It
11 is generally known that ink composition has a
12 significant influence on ink aging. Thus,
13 analyzing representative ink referenced
14 populations is essential to ensure that the
15 selected aging parameter can be implemented in
16 those cases."

17 Do you agree or disagree with that statement?

18 A. I don't know -- I don't know what they
19 mean by "ink aging parameter."

20 Q. In the Koenig article we discussed
21 previously, A Comparative Study of Ballpoint Ink
22 Aging Parameters Using GC/MS. There is a
23 statement in that article that says, "The
24 calculation of R percent value may yield
25 propagation of the uncertainty because two

1 G. LaPorte - Confidential

2 different samples were used. These results
3 actually showed that the aging parameter, R
4 percentage, did not minimize the variability of
5 measurements, but in contrary did yield increased
6 RSD values for older samples compared to PE
7 quantities. This was not expected from earlier
8 publications."

9 Are you familiar with that work?

10 A. I would have to read that more in depth
11 to understand exactly what that's saying. But
12 I -- when was that paper -- the date of that
13 paper?

14 Q. 2015.

15 A. So things have changed since 2015 as
16 well too. What I do know is that a lot of the
17 way some of the researches were making --
18 actually taking their samples in making their
19 measurements created a lot of uncertainty.

20 Q. We talked about resins a little bit. I
21 want to keep this moving. I understand you have
22 another engagement. Do we agree that the rule of
23 hardness in resins is important?

24 A. Yes.

25 Q. Do we agree that low amounts of solvents

1 G. LaPorte - Confidential

2 may even stay trapped in the ink matrix for
3 years?

4 A. Absolutely.

5 Q. There's one more slide I want to show
6 you.

7 MR. BERMAN: Toni, can pull up the slide
8 that says at 304 days.

9 (LaPorte Exhibit 6, marked for
10 identification.)

11 Q. Mr. LaPorte, I'm directing your
12 attention to the exhibit labeled LaPorte
13 Exhibit 6. This is a graphic that was excerpted
14 from the Koenig and Weyermann paper. The
15 citation is under the graph. As you can see on
16 the X axis there's a label, sample age and days
17 and on the Y axis -- vertical axis, we have a
18 quantity indicated of R percentage.

19 Do you see that?

20 A. Yes.

21 Q. So the sample -- the age of the sample
22 in these goes out to 304 days in this chart,
23 right?

24 A. Yes.

25 Q. Do we agree that all of these samples

1 G. LaPorte - Confidential

2 indicated here are above the 25 percent threshold
3 for the window of time from zero days out through
4 304 days?

5 A. I don't understand this data. I mean,
6 are these -- are these different inks? Are they
7 the same ink? Is it just one ink?

8 Q. Does that matter to answering the
9 question?

10 A. Well, yeah, it does -- I mean, it does
11 -- I would like to understand sort of what I'm
12 looking at. I mean, I will say the first thing
13 is that I would have -- I have serious doubts
14 about this data. I can tell you very rarely do I
15 even see inks with a 40 percent solvent loss
16 ratio. That doesn't happen very often. So when
17 I'm seeing this -- I'm speculative -- not
18 speculative -- but I'm little concerned about the
19 data and how they did the testing. I assume is
20 this ink lines?

21 Q. This is a chart from the Agnes Koenig
22 anything article, Ink Dating Part I. My question
23 to you is whether I'm reading the chart right
24 that it shows each of these samples -- taking
25 into account your raising the point of what are

1 G. LaPorte - Confidential

2 the samples, same ink or different ink -- but
3 they all appear to be above 25 percent and as you
4 pointed out, they go as high as about 70 percent
5 on the chart, don't they? Am I reading it right?

6 MS. GUERON: Objection.

7 A. What's confusing is you keep saying
8 "samples" and that's why I asked is this multiple
9 samples? I can't answer your question is this a
10 sample that's being tracked, you know, from day
11 four -- day three or four or is this multiple
12 samples?

13 Q. Okay. Whether -- either case of that is
14 true, right, they're all over 25 percent on the
15 chart; am I reading right?

16 A. Yes, I'm seeing above 25 percent. Yes.

17 Q. That's the question is whether I'm
18 reading the chart right.

19 MR. BERMAN: Let's take a very quick
20 break. I suspect I'm finished with my
21 questioning. I want to take a moment and
22 confirm, okay?

23 MS. PRIMAVERA: Yes.

24 (Whereupon, a brief recess was taken.)

25 Q. Mr. LaPorte, I have two other questions

1 G. LaPorte - Confidential

2 for you. First of which, is are you aware of any
3 published study that shows solvent loss ratios
4 for inks that are aged to six years?

5 A. No, I'm not.

6 Q. And then with respect to the ratio
7 between heated and unheated samples, can that
8 ratio change as time goes on?

9 A. It depends on when the time -- when
10 you're talking about the time, like, what, from
11 day five to day twenty or -- you know, I don't
12 understand sort of the time difference in when it
13 starts and when it stops.

14 Q. For any given ink is it fair to say that
15 you can create a chart of the rate of evaporation
16 of the ink?

17 MS. PRIMAVERA: Objection.

18 A. So you could in theory do that. So what
19 you're saying is like sampling at different
20 periods of time. That's typically not practical,
21 I mean, in litigation but it can be done.

22 Q. Setting aside the practical aspect. I'm
23 really asking it as a theoretical question. If
24 you took a compound of ink and you didn't have a
25 supply constraint in terms of you're going to run

1 G. LaPorte - Confidential
2 out of it, right, you can take that ink and you
3 can put all of it on different papers at the same
4 time and then at one day old you can measure a
5 paper and see how much of it evaporated and set
6 that one aside and then at two days old you can
7 look at your next sample and see how it
8 evaporated and you can plot that in a curve,
9 right?

10 A. Well, you presented a lot of curves.
11 That's exactly what was done, yes.

12 Q. You can do the same thing for heated
13 samples of the same ink, right?

14 A. Yes, you can. Sure.

15 Q. So in theory if you did that for any
16 particular ink, are you going to find that the
17 curves have the same shape and therefore the
18 ratio between the two curves remains constant or
19 are you going to find something else?

20 A. Those ratios should generally change.

21 Q. Okay. And will the change always be in
22 the same direction over time?

23 A. It shouldn't -- if you're doing the
24 testing correctly, right -- and I'm not just
25 talking -- I don't want to downplay what happens

1 G. LaPorte - Confidential
2 in a research environment. So a lot of
3 researches they don't -- this idea of sampling
4 one centimeter lines and all this and I've spoken
5 publically about this many times and that doesn't
6 make any sense, right. There's things you can do
7 when you heat if's all coiled -- and I've seen
8 one researcher coil it up and so when you're
9 heating it, it all just spreads to each other --
10 it contaminates one side to the other side that's
11 coiled up. You have to understand the heating
12 process and how it's done.

13 In theory, I mean, over a longer period
14 of time the ratio should get -- should get
15 smaller -- the solvent loss ratio should
16 decrease. But, of course, there will be a little
17 measurement uncertainty in there but
18 statistically you would have to do that with
19 multiple samples and then monitor that. And then
20 it will all depend on how the ink is stored and
21 all that as well too.

22 Q. Okay. So if we measure the ink
23 according to your own methods and we plotted
24 those two curves, are we going to see the ratio
25 continuously decreasing as time elapses, is that

1 G. LaPorte - Confidential

2 going to be uniform?

3 A. Generally -- I don't know if I would
4 call it uniform but, generally, there should
5 be -- it depends what the time is because you
6 will have to measurement an uncertainty. But
7 from day -- say day 10 versus day 50, right, then
8 that ratio should get a little smaller.

9 MR. BERMAN: I have no further questions
10 at this time. Thank you for your time
11 today, Mr. LaPorte?

12 THE WITNESS: Thank you.

13 MS. PRIMAVERA: Thank you. I will need
14 this expedited before Wednesday.

15 (Whereupon, the examination of this
16 witness was concluded at 3:51 p.m.)

17

18

19

20

21

22

23

24

25

1

2

A C K N O W L E D G M E N T

3

4

STATE OF

)

: ss

5

COUNTY OF

)

6

7

I, GERALD LaPORTE, hereby certify that I

8

have read the transcript of my testimony taken

9

under oath in my deposition of October 7, 2021,

10

that the transcript is a true, complete and

11

correct record of my testimony, and that the

12

answers on the record as given by me are true and

13

correct.

14

15

16

17

GERALD LAPORTE

18

19

Signed and subscribed to before
me, this day
of , 2021.

21

22

23

Notary Public, State of

24

25

1

2

I N D E X

3

WITNESS

EXAMINATION BY

PAGE

4

Gerald LaPorte

Mr. Berman

5

5

6

E X H I B I T S

7

8

LAPORTE

PAGE

9

1

Report

12

10

2

Slide

144

11

3

Slide

144

12

4

Slide

153

13

5

Slide

156

14

6

Slide

188

15

16

17

18

19

20

21

22

23

24

25

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

C E R T I F I C A T E

I, TONI MUSACCHIA, a Notary Public in and
for the State of New York, do hereby certify:

THAT the witness whose deposition is
hereinbefore set forth, was duly sworn by me and

THAT the within transcript is a true
record of the testimony given by such witness.

I further certify that I am not related,
either by blood or marriage; to any of the
parties to this action; and

THAT I am in no way interested in the
outcome of this matter.

IN WITNESS WHEREOF, I have hereunto set
my hand this 11th day of October, 2021.

Toni Musacchia

TONI MUSACCHIA



A		
a.m 1:15	127:4,5,20 146:19,24 147:16,24	58:14 59:15,16,20 60:6,9 62:11
ability 7:23 8:3	148:14 151:6,8 157:24 166:22	63:6 67:14 78:5 85:2 88:14 89:2
able 6:11 33:13,19 37:6 46:15 48:9	184:3,9,11 185:5,23 186:6,12,15	97:17 104:3,19 110:7 114:20
48:11 83:22 106:7 109:8 112:12	186:19,22 187:3	119:16 121:10 129:10 131:24
120:2 159:8 179:15	Aginsky 125:6,12 134:21,22 141:20	134:14 135:22 136:16,22 141:23
absolute 19:18 123:14 130:10,11	Aginsky's 135:8 176:13	147:4 174:7,14 177:5 179:14
139:2 146:3 175:17	agitate 69:7,12 124:5,20	183:24
absolutely 14:18 18:6 50:4 148:18	agitated 69:9 70:2,4,6	analytical 52:21 130:21 141:11
153:19 188:4	agitates 77:4	179:21
absorb 25:18 132:14	agitating 70:12 71:4	analyze 44:20 82:5 123:15 136:18
absorption 166:13	agitation 71:17 82:17	analyzed 37:7 56:22 75:2 76:11
abstract 153:6 154:22 157:6 166:25	Agnes 127:17 151:5 169:24 186:5	78:7 80:8 180:11
167:12,21	189:21	analyzing 81:15 111:11 145:7
abundance 158:23 160:12	ago 142:15	158:3 186:13
accept 117:11	agree 19:4 101:16 113:13 115:16	angle 128:6,7
accepted 50:6 111:6 158:3 175:23	116:17 119:18 125:22 127:11,13	answer 6:18,24 7:8 8:19 13:21 31:2
176:4,9,11,14,23 177:22	127:23 129:14 131:23 133:21	37:22 38:9 52:24 54:13 55:3
account 189:25	135:25 136:4,20 143:6 144:21	117:13 190:9
accuracy 182:17	149:2,24 150:5 167:9,25 169:12	answering 189:8
accurate 77:15 172:17	171:11 174:8,17 179:8 180:24	answers 195:12
accurately 7:24 8:4	181:15 184:15,22,25 186:17	anticipate 8:21
accustomed 111:25	187:22,25 188:25	Antonio 134:10
acetonitrile 66:9,10,12,12,16,22,25	agreeable 150:7	anybody 136:9
67:3,6 68:9,11,17 69:4,25 71:21	agreed 3:4,10,15 4:3	apart 8:22 124:8
71:25 72:21,23,24 74:7,21 75:19	agreement 26:22 173:13,18	apologize 15:6,19 16:4
75:23 76:9,9,18,19 77:3 81:4	agriculture 156:23	Apparatus 28:2
97:14,15,16	ahead 97:25 120:6,21 158:9	appear 190:3
acetophenone-formaldehyde-resin	Ahoy 40:22	appearing 5:11
184:10	air 79:8,11,23 80:2 122:10,16	appears 129:12 155:7,15 159:3
achieve 141:17	165:19,22	apples 97:3,3
ACN 96:17,21 97:13	Akinsky 126:4	applicable 55:25 114:19 144:24
acronym 51:11,18	al 136:17 184:7	157:22
Act 109:20	Al-Hawary 152:25	Application 134:13 135:19 183:23
action 6:6 197:12	Albert 176:21	applied 21:9 24:10 58:7 90:12,18
activator 24:8	Aldila 15:15	138:6 140:19 141:20 144:11
acts 65:19 66:12	allow 41:25 156:16	148:14 153:23
actual 122:6	allows 34:16 35:14 45:12 65:21	applies 59:15 114:21 115:22 126:15
add 35:5 47:18 66:7,9,25 67:16	81:12 99:19,25	apply 44:10
69:4,24,25 77:2	Almog 134:9 174:3	applying 57:3 120:16
added 67:5 135:8 138:6	alter 178:23	approach 106:18
adding 66:21 75:18	amenable 88:13	appropriate 156:5
additives 184:5	America 1:8 2:11 130:25 131:6	approximate 171:22
address 5:24	145:15	approximately 21:6 24:20 71:9
adhere 102:10	amount 20:14 24:2 48:15 54:12	92:20 185:19
adjacent 89:6 129:23,24 141:7	60:14,23 61:8 62:14 89:8,13,20	approximation 93:25 141:17
149:20 162:9	90:11,13,14 107:15 109:6 110:8	arbitrary 37:6
adjust 49:7,12	111:15,20 112:17 128:2 136:7	area 83:16 88:18,24 89:3,6,21 94:8
administer 4:8	amounts 41:16 89:16 90:3 128:8	94:12,15,19 96:2,5 100:13 112:10
affect 8:3 89:13 148:13 165:7	140:20 184:6 187:25	123:11,24 125:19 128:17 129:13
against- 1:6	ana-like 79:17	129:25 130:2,5,6,14,19 135:7
age 98:24 104:4,16,23 125:9 136:18	ana-link 74:25	138:15 165:25
141:18 150:20 168:3 181:17	analogy 21:25 64:25 65:2 68:3 82:4	areas 59:2 88:13,15
185:5 188:16,21	98:10 121:22,23 123:7,8 182:16	argument 121:15
aged 191:4	analyses 26:3	Arizona 178:21
Agency 4:13 125:18 128:14 141:5	analysis 20:13 25:21,24 26:15	arm 73:8 74:11,22 75:16 76:12,14
ages 160:24 181:11	27:24 33:16,22,25 34:21 36:19	76:17 79:21,21
aging 102:6 103:23 105:20 106:2	46:17 47:12 49:25 50:2 52:8,10	article 163:14 168:19 169:10,18
	52:12,13,13,22 56:4,13 57:11	170:4 171:8 173:18 174:3 179:25

180:2,3,8,9 183:25 184:18,19,20 184:23 186:20,23 189:22 articles 163:4 169:11,12 173:21 183:20 articulate 18:18 artificial 127:4 157:24 ascertain 9:25 aside 10:11,14 116:17 181:25 191:22 192:6 asked 83:5 124:22,23 169:22 173:25 175:7 183:20 190:8 asking 6:7 7:4 10:12 35:22 36:8 38:19,20 40:6,7 54:11 67:25 83:13 97:24 103:13 114:17 148:10 178:6 184:19 191:23 aspect 31:23 32:25 191:22 aspects 184:4 assessed 166:12 assessment 136:25 assign 30:22 assist 24:10 Association 51:13 assume 138:8 158:11 189:19 assuming 131:19 ASTM 51:4,5,9,11,12,14,15,17 51:19,22 52:7,24 54:9 55:21,21 attachment 12:10 attention 161:3 188:12 attorneys 1:20 2:3,7,11,16 7:7,9 audible 6:13 author 173:8 authored 173:8,9 authors 134:15 140:12,19 151:10 180:5 auto 72:12,12 73:3,6 74:10 75:16 76:4 77:5,10 82:17 automated 79:20 automatically 76:6 85:17 available 178:8 Avenue 2:8,17 average 110:8 114:15 115:5,7,9,13 116:14 118:25 averages 114:5 avoid 32:23 avoided 89:12 aware 114:23 134:15 136:9 139:21 148:25 153:3 162:6 163:13 164:9 166:11,16 170:4,7,13,20 173:23 176:3 177:16 191:2 axis 81:8 91:25 92:4,5 93:25 155:8 155:9,10,18 158:23 188:16,17,17	85:6 86:19,21 87:2 91:7,10 93:24 126:5 131:16 135:9,18 136:23 162:20 175:16 background 54:12 83:18 backside 86:14 87:11 bad 40:23 ball 157:3 ballpoint 30:6 36:21 37:14 42:22 44:6 88:15 90:22 125:9 127:5,20 139:18 151:7 152:25 154:5 166:22 178:3 186:7,21 banner 138:5 base 31:16 114:12 based 31:10 32:2,18 33:5,10,16 35:2 37:13,18 55:9 62:16 75:5 80:24 82:11 83:4,6 85:8 88:25 90:15 92:13 99:10 102:12,24 108:12 110:6,22,25 111:3,10,22 116:3 118:19,20,22,25 119:15,16 119:17,20 120:14 121:6 123:15 129:10 131:2,4 134:13 136:15,25 141:19 175:17 183:24 bases 11:24 21:19 59:12 basic 49:24 83:16 97:9 basically 54:8 80:22 116:20 basics 75:6 basis 179:9 Bates 86:5,9 Bates-stamp 86:13 Bates-stamped 14:25 86:7,12,14 Battery 2:12 becoming 166:17 Bee 4:13 beginning 15:14 68:3 90:24 182:4 behavior 133:22 146:19,24 147:17 148:14 belief 5:11 believe 14:6,14,22 15:8 27:22 50:7 58:22 100:17,18 109:10,22 125:11 127:6,22 128:12 130:24 133:17 139:23 143:2 145:13 169:17 172:23 179:25 Bello 139:15 144:6 benchmark 98:23 105:23 Berman 2:5 5:5,21 6:5 12:9,18 13:12,19,23 15:10 16:23 19:23 85:6 91:5,9 137:24 142:21 143:16 153:10,19 154:16 156:9,12,16 157:10,18 158:13 161:19 163:18 188:7 190:19 194:9 196:4 best 5:10 6:15,23 7:2 13:16 22:8 41:16 65:18 99:23 better 126:4 182:20 beyond 21:8 46:5 bibliography 180:12 BIC 37:11,21,24 38:8,13,22 39:16 40:10 154:12,13 158:18,20 178:20	big 90:7 94:23 129:8 135:5 160:17 183:18 bigger 182:19 Bioethics 179:2 bit 16:24 42:3 69:2 100:7 101:12 103:5 148:10 154:9 167:15 181:18 187:20 black 30:6,6,8,18,20 31:3,6,7 36:20 37:14 38:12 39:14,21,22 154:24 155:3 158:17 159:8,8 161:11 blank 81:2,5 117:24 149:8 150:16 164:25 165:12 177:14 blanks 143:11 144:25 146:6 blood 197:11 blow 154:16 body 56:8 book 100:18 130:15 Border 125:18 128:13 141:4 bottom 15:21 16:2 18:8 88:23 154:24 155:14 brand 178:14,15 brands 39:4,6,25 40:5,7,19 179:6 Brazeau 100:25 171:20 172:22 173:4 180:3,4 Brazil 130:25 Brazilian 178:25 break 8:15,17,17 91:6,12 124:8 153:18 190:20 breaking 67:15 180:17 breaks 8:20,21 brief 91:8 153:20 156:11 190:24 bring 47:15 BRITTANY 2:14 Broomfield 6:2 brought 47:16 browse 14:16 Brunelle 136:14,21,22 brush 68:5 bubbles 79:8 80:2 Buchner 140:14 Bugler 134:9 136:17 137:3 140:11 140:14 141:2 174:4 184:7,16,19 185:3 built 73:7 96:9,14 99:17 117:19,20 120:8 135:11 butter 32:16 buy 32:14
C		
c 1:1 2:1,2 3:1 4:1 5:1 14:16 15:5 154:12,13 158:19,20 159:4,5,5 161:3 195:2 197:2,2 caffeine 82:6 calculation 96:9,13,14 115:17,18 186:24 calculations 65:17 95:2 calendar 132:12 calendared 25:15		

<p>call 12:25 13:2 20:22 21:22 25:15 26:5,11 32:19,20 38:8,16 74:25 77:12 78:5,24 81:13 95:15 96:16 99:20 126:16 135:4 147:13 151:22 169:9 194:4</p> <p>called 14:13 26:14 27:25 64:9 65:7 65:12 69:16 70:17 72:10,12 73:3 88:16 163:10 181:8</p> <p>Canada 125:18 128:13 141:4</p> <p>Cantu 134:10,16,17 174:4</p> <p>capable 167:4</p> <p>capacities 1:10,11,11</p> <p>captured 10:18</p> <p>careful 132:25 163:2</p> <p>Carina 139:15 144:6</p> <p>carried 165:19</p> <p>Carvalho 139:15 144:6</p> <p>case 11:5 44:9,19 47:14 62:3 101:20 107:17 108:22 125:3 134:14 135:15 144:24 149:22,23 150:18 150:24 165:16 176:25 177:12 183:24 190:13</p> <p>cases 45:18 108:9 167:7 186:16</p> <p>caught 43:22</p> <p>cause 24:17 132:18 148:24 160:20 185:4,4</p> <p>causes 22:6</p> <p>caveat 41:18 156:21</p> <p>Celine 126:25 134:9 135:12,14,14 151:6 169:24</p> <p>Celsius 58:9 62:13 124:3,16 159:11 159:12</p> <p>center 73:11</p> <p>centers 91:3</p> <p>centimeter 157:25 159:20,22,23 160:5 162:8 193:4</p> <p>certain 19:17 29:19 41:19 54:23 92:12 102:12 106:21 132:17 148:24 160:10 161:8 176:8 185:3</p> <p>certainly 23:17 51:25 56:21 87:9 100:10 101:18 135:5 143:15 149:10 151:21 181:15</p> <p>certainty 19:18 99:5 105:20 107:13 119:15 122:6 123:12</p> <p>certification 3:6</p> <p>certify 195:7 197:5,10</p> <p>chance 124:2 145:9 182:12,20</p> <p>Chancery 109:21</p> <p>change 60:16 125:22 151:16,17 191:8 192:20,21</p> <p>changed 51:16 187:15</p> <p>changes 111:14 151:18</p> <p>chapter 83:9,11 100:18 130:15 164:2,6</p> <p>characteristics 33:7,8 35:11 147:24 181:17 185:23</p> <p>characterize 38:3 135:6 175:13</p> <p>chart 155:16,25 156:19 157:13</p>	<p>184:17 188:22 189:21,23 190:5 190:15,18 191:15</p> <p>charts 154:24</p> <p>check 47:23</p> <p>chemical 1:8,9,9 2:11,17 20:13 22:22 25:21 32:3,4,11 42:4,7 52:22 65:11 92:8,13 99:21 110:7 174:14</p> <p>chemically 41:12</p> <p>chemicals 32:22</p> <p>chemist 75:7,9 83:20,24 84:3</p> <p>chemistry 31:22 49:24,24 50:3 83:16,18 97:9 162:23 163:7 182:17</p> <p>chemists 174:24,24 175:2</p> <p>chemists's 156:23</p> <p>chip 32:14,15,17 40:21</p> <p>chips 32:16 40:22,24</p> <p>chocolate 32:14,15,16,17 40:21,24</p> <p>chromatograph 92:9,11</p> <p>chromatography 26:15,18 27:2,5,8 42:13 125:10 154:6</p> <p>Chromatography-Mass 137:15 153:2</p> <p>circumstances 104:2</p> <p>citation 18:11 138:4 188:15</p> <p>cite 172:20 173:4</p> <p>cited 84:16,17 180:9</p> <p>citing 16:18</p> <p>City 2:4</p> <p>civil 4:5 11:6</p> <p>CLARICK 2:7</p> <p>clarify 38:11 119:14 120:15 167:13</p> <p>clean 75:20,23 76:7,8,8,18,19 77:22 79:15,16</p> <p>cleaned 78:23,25</p> <p>cleaning 73:24 74:24 79:18,25</p> <p>cleans 74:20 75:22,23</p> <p>clear 7:3,4 9:24 20:9 32:13 34:17 36:19 40:6 45:25 82:2 138:7 144:9 153:25 164:13,15 175:21 180:18</p> <p>clearly 12:12 177:3</p> <p>climate 178:21,22</p> <p>clones 150:14</p> <p>close 73:6 107:5 119:6</p> <p>closed 20:17 166:5</p> <p>closer 6:11 161:11</p> <p>coauthors 179:21</p> <p>coil 193:8</p> <p>coiled 193:7,11</p> <p>coincides 173:23</p> <p>Coke 82:5</p> <p>cold 126:19 127:14</p> <p>collaboration 185:17</p> <p>collection 185:17</p> <p>college 49:24</p> <p>color 26:7 29:14 33:9 46:5</p>	<p>Colorado 6:3</p> <p>colorants 23:20 45:15,16,17 46:14 82:6</p> <p>column 30:10</p> <p>COLWIN 2:15 19:20 84:2 109:14 118:15</p> <p>combination 66:11</p> <p>combined 29:11,19 35:17 47:3 48:4</p> <p>come 24:13 38:22,24 39:3,15,18 81:7,10 82:7,10 91:7,10 92:16,16 92:23 96:7 110:20 167:17 172:2 174:11 186:2</p> <p>comes 20:6 49:9 74:25 92:19 93:6 93:18 94:3 161:11</p> <p>comfortable 134:3</p> <p>coming 145:22 156:23 160:23</p> <p>comment 174:11 176:7</p> <p>comments 54:21</p> <p>common 37:14 87:21 150:10</p> <p>commonly 178:8 181:12</p> <p>communications 7:12</p> <p>community 19:3 135:24 167:8</p> <p>companies 39:7,9</p> <p>company 178:22</p> <p>comparative 127:20 145:5 151:7 166:21 186:21</p> <p>Comparator 26:13 35:14</p> <p>compare 26:15 45:8 64:8,11 93:20 103:14</p> <p>compared 94:17 129:16 132:20 187:6</p> <p>comparing 94:25 96:5 97:2 103:18 130:12 132:19,21,23</p> <p>comparison 34:11 37:12,21 49:21 50:10,16,20 64:17 65:23 132:22 145:6 149:16 180:23</p> <p>comparisons 49:3 52:2</p> <p>complaining 67:24</p> <p>complete 47:19 75:12 195:10</p> <p>completed 38:9 39:11 49:17 59:4 63:3 68:24 81:17 82:14 89:10 102:2 120:3,11 160:7,25 183:4</p> <p>completely 6:24 62:21 70:14 123:7 130:6 173:14</p> <p>complex 21:7,16 24:15,22</p> <p>complicated 39:6,7 106:15</p> <p>component 33:18</p> <p>components 22:24 23:2,12,15,19 33:4,10 35:6 45:21 46:5 48:10,12 67:16 76:2 82:3,10 92:10,16 127:7</p> <p>composition 32:11 54:3 184:3 186:11</p> <p>compound 20:14 22:12 165:21 191:24</p> <p>compounds 23:4,6,9 33:14 180:10 180:15,20 184:5</p> <p>computation 94:14</p>
---	---	---

computer 17:4 concentrate 48:16 128:2 concentrated 45:2 48:8,14,14,20,21 49:13 concentration 48:13 94:2,8,10 concentrations 139:5,6 144:16 concept 97:16 113:22,25 121:2 147:11,13,15,20,20 148:2 conceptionally 65:25 concepts 147:10,19 concern 167:8 concerned 189:18 concerns 45:17 conclude 110:5,10 112:6 170:11 concluded 77:5 144:17 194:16 conclusion 15:7 16:12,13 18:18 19:18 28:24 30:2 71:16 111:12,17 112:10 167:17 172:2 173:11 182:13 conclusions 11:13,18 12:5 14:5,8 15:3 16:8,21 18:13,16 19:9,12 20:10 107:11 108:10 133:15,16 139:7,11,12 183:2,7 condition 8:3,6 183:12,15 conditioner 122:11 conditioning 122:17 conditions 126:10,13 127:10,13 180:22 183:10,14 conduct 8:24 48:2 57:6,10 58:18,24 59:7 conducted 4:6 conducting 47:11 conference 1:22 4:12 5:12 confidence 99:19 105:7 107:4 108:21 111:17 115:21 117:10 118:19,22 119:10,16 121:3,5,6 123:2 131:17 182:9 confident 102:17 118:8 Confidential 6:1 7:1 8:1 9:1 10:1 11:1 12:1 13:1 14:1 15:1 16:1 17:1 18:1 19:1 20:1 21:1 22:1 23:1 24:1 25:1 26:1 27:1 28:1 29:1 30:1 31:1 32:1 33:1 34:1 35:1 36:1 37:1 38:1 39:1 40:1 41:1 42:1 43:1 44:1 45:1 46:1 47:1 48:1 49:1 50:1 51:1 52:1 53:1 54:1 55:1 56:1 57:1 58:1 59:1 60:1 61:1 62:1 63:1 64:1 65:1 66:1 67:1 68:1 69:1 70:1 71:1 72:1 73:1 74:1 75:1 76:1 77:1 78:1 79:1 80:1 81:1 82:1 83:1 84:1 85:1 86:1 87:1 88:1 89:1 90:1 91:1 92:1 93:1 94:1 95:1 96:1 97:1 98:1 99:1 100:1 101:1 102:1 103:1 104:1 105:1 106:1 107:1 108:1 109:1 110:1 111:1 112:1 113:1 114:1 115:1 116:1 117:1 118:1 119:1 120:1	121:1 122:1 123:1 124:1 125:1 126:1 127:1 128:1 129:1 130:1 131:1 132:1 133:1 134:1 135:1 136:1 137:1 138:1 139:1 140:1 141:1 142:1 143:1 144:1 145:1 146:1 147:1 148:1 149:1 150:1 151:1 152:1 153:1 154:1 155:1 156:1 157:1 158:1 159:1 160:1 161:1 162:1 163:1 164:1 165:1 166:1 167:1 168:1 169:1 170:1 171:1 172:1 173:1 174:1 175:1 176:1 177:1 178:1 179:1 180:1 181:1 182:1 183:1 184:1 185:1 186:1 187:1 188:1 189:1 190:1 191:1 192:1 193:1 194:1 confirm 26:9 29:23 37:20 81:15 85:24 138:8 148:5 190:22 confused 86:23 confusing 190:7 conjecture 37:16,17 connection 7:13 8:24 9:19 10:15 126:7 connote 100:4 consent 4:17 conservative 99:24 102:8,15,19 105:14 106:18,24 119:25 142:4 consider 10:21 112:2 175:3,11 considered 4:18 53:18 115:21 135:22 184:4 consistency 117:23 160:3 consistent 21:12 88:19 89:8 118:3 159:21 constant 192:18 constraint 191:25 contain 76:8 100:20 143:7 148:12 150:11,15 contained 10:23 12:6 14:12 16:9 23:13,14 29:6 33:14,20 34:20,23 41:6 93:9 143:11 contains 31:7 36:8,11 78:6 80:18 141:21 154:2 contaminate 149:5 contaminated 145:9 147:23 149:3 149:12 166:14 contaminates 193:10 contamination 145:17 146:6,10,14 146:25 149:10,18,25 164:17 165:5,7 contaminations 145:10 contend 171:7 contending 169:18,20 content 56:20 181:19 contention 136:8 contents 83:7 continue 20:11 68:20,21 69:19 continues 21:4 153:13 180:16 continuing 14:2 continuously 70:6,25 193:25	contrary 187:5 Contrast 161:14 control 4:13 56:21 81:2 91:13,17 128:20 143:10 165:4 177:4,9 cook 98:7 cooked 98:19 cookies 32:14,15,18 40:22 copy 17:3,6,7 173:7 core 22:11 corp 15:15 Corporation 1:9,9 2:17 correct 8:10 13:10 16:16,17 18:14 18:18,24 20:3,8,18 21:15 25:23 26:24 27:3,18,19 28:6,7 30:15,18 30:19 31:4 36:4,24,25 38:25 39:4 39:5,22,23 40:17 41:8 42:7,11,25 44:14 45:14 53:3 54:7 55:6,19,24 56:11,15 58:4 61:4,5 63:17,19,20 63:23,25 64:2,4,12 65:4 66:5,6,17 66:23 67:19,20 68:14 69:6 71:14 71:15 72:6,22 73:2 74:9,12,13 77:24 78:11,14,15,19 80:3,6,9,13 84:4 85:10,23 87:2,3 89:18 90:20 92:2,4,5 93:8,16 95:24 96:12,23 96:25 97:5,18 98:8,21 106:19 113:3,10,11,17,20,21 122:13 123:21 128:11,24 130:9 134:18 134:21 138:12 143:12 165:14 171:12,13 174:17 175:11,24 177:15 185:23 195:11,13 corrected 65:19 96:10 correcting 94:21 correctly 52:23 66:20 74:2 105:19 112:14 183:6 192:24 corresponding 94:12 180:10 Costa 1:10 2:7,11 counsel 3:6 4:3,10,22 6:5 7:13 9:7 9:11,18 10:5,11,13 Country 2:4 COUNTY 195:5 course 17:16,16 18:6 28:15 43:2 70:5 104:18 115:20 142:12 160:17 193:16 court 1:2 3:18 4:7,23 6:21 7:16 14:18 20:23 82:25 109:21 157:3 157:11 176:9,11,14 courts 138:23 175:23 176:5 177:19 covers 36:18 Crawford 136:14,22 create 130:3 158:4 191:15 created 13:9 55:16,17 187:19 creates 23:7 24:7 credited 177:18 cresol 65:13,17,19 81:4 96:17,21 criminal 168:22,23 criminologist 168:17 criticized 138:23 critiqued 133:12
---	--	--

<p>critiques 160:10 cross 149:17 crosslinking 21:22 22:13,15,16 currently 7:22 8:2 curriculum 50:3 curvature 90:16 127:25 161:7 curvatures 160:12 curve 88:15 90:6,7 94:2,5,7,9,12,15 94:19 95:3 96:2,6,16 151:18 159:8,9 160:21,23 161:9,23 192:8 curved 89:25 128:5 curves 160:16,19 192:10,17,18 193:24 cut 22:2,6 85:7 cutting 158:6</p> <hr/> <p style="text-align: center;">D</p> <hr/> <p>d 1:1 2:1 3:1 4:1 5:1,15 15:13,14,16 57:15,16 195:2 196:2 Dallmayer 140:14 dark 49:10 dash 158:19 data 85:17 94:11 102:25 108:5 117:23 118:8,19 119:7,7 133:20 138:25 139:3,13 146:5 147:4 158:5 159:11 161:22,24 173:22 173:23 175:16 189:5,14,19 database 185:11,20 databases 185:14 date 1:22 5:4 16:16 30:9,17 36:22 135:22 136:16 171:21 174:6 187:12 dated 136:15 dating 104:18 130:22 131:19 133:4 134:13 135:20 136:15 137:14 138:18 141:11 152:25 154:5 167:4 169:25 174:7 175:22 176:18 177:17,23 179:22 183:23 186:5 189:22 day 60:17 190:10,11 191:11,11 192:4 194:7,7,7 195:20 197:16 days 188:8,16,22 189:3,4 192:6 de 139:15 144:6 168:20 debating 148:22 debunked 173:24 decade 167:3 decide 55:4,8,9 decides 55:4 decimal 115:15 decimals 115:14 decrease 108:21 150:19 193:16 decreases 105:21 107:14 109:6 decreasing 193:25 Defendant 2:7,16 Defendants 1:12 2:11 9:8,11 define 150:22 defines 54:6 definitely 84:10,13,18,23 97:8</p>	<p>130:16 definition 18:19 20:4,6 defuse 129:4 degree 62:13,24 99:4,5,19 100:2 101:15 102:11 105:6,7 110:12 118:18 119:9,15 120:18 123:2,12 124:3,16,24 131:17 161:5 degreed 123:19 degrees 58:9 63:24 107:11 123:10 123:23,25 124:9,12,12,12 125:13 125:14 126:5 154:12,13 158:19 158:20 159:5,5,11,12 161:21,21 183:17,17,17 delve 100:6 denoted 95:9 dense 129:16 densitometric 125:10 density 71:23 department 50:25 156:24 depend 25:3,13 48:18 107:15 111:16 193:20 depending 44:24 49:12 60:15 90:5 94:6 103:23 104:2,10 128:4 132:11 137:10 155:16 depends 44:23 48:17 61:8 90:6 106:2 111:15,19 129:7,19 133:24 147:20 150:21 151:23 152:9 168:2 169:10 178:20 191:9 194:5 deposed 8:9 deposited 90:13,14 128:9 deposition 1:19 4:6 9:12,22 10:3,3 10:15 106:5 195:9 197:6 depress 71:8 depth 187:10 describe 22:8 28:15 57:9 59:10 described 11:16 23:25 30:21 49:19 53:11 55:22 56:24 58:11,21,22 59:16 60:18 61:16 77:5 80:19 81:24 82:16,18 87:19 97:4 152:6 158:18 describing 28:19 42:6 45:11 56:13 57:22 58:3 70:15 description 22:18 42:9 designate 30:23 designation 37:6 desk 166:5 detect 149:11 detected 147:2 detection 28:2 140:2 detections 140:8 determination 112:19 125:9 139:19 determine 26:8 33:13 98:18,24 122:2 131:2 133:24 141:20 149:9 150:17 determines 24:24 48:15 61:6 determining 104:3 137:4 develop 167:3 developed 172:13</p>	<p>Developers 109:19 developing 56:25 Development 51:9 53:11 deviating 105:13 deviation 113:23 114:8,10,19,21,24 115:18,23 116:23 117:9,12 118:21 119:17 130:3 167:24 device 26:22 59:3 73:3,16,17 88:12 differ 180:23 difference 31:19 53:20 58:9 60:20 61:17 64:20,24 114:7 132:4 151:25 161:12 166:12 183:14,18 191:12 differences 34:2 35:8 41:19,21,24 90:11 134:23 148:18,20 174:15 different 6:16 22:5,24 23:11 26:16 27:11,13 30:13,24 31:20 32:15,22 35:11,12,23,23 39:25 45:9 57:25 64:11 78:18,21 80:20 82:3,7,9,10 87:8 90:3,17 92:10,14,15,17 102:5,6 103:16,17,19 104:13 107:11 113:15 115:19 116:15 126:10,10,12,12 127:10,11,13 128:8 130:6 139:7 147:10 148:11 159:2,3 160:11,13 163:4 170:16 179:6 181:16,16,17 185:22 187:2 189:6 190:2 191:19 192:3 differentiate 31:10,13,15 34:7 35:21 37:7 39:21 46:24 differentiated 32:2 34:15 differentiation 147:18 differently 89:23 104:12 118:10 129:5 178:7 difficult 44:8,13 111:23 152:11 digit 110:23 111:10 digital 10:19 80:15 digits 112:23 142:12 dips 76:13 direct 5:20 14:18 37:20 161:3 directing 188:11 direction 192:22 directions 119:3 directly 74:3 dirty 75:21 76:15 disagree 102:8 131:12 135:25 136:20,21 144:21,23 149:24 167:9,10,14,25 171:11 179:8,9 180:24 181:2,3,5 182:21,23 183:6 183:11 184:22 186:17 disagreed 102:4 disagreement 174:8 disburses 76:14 discern 46:15 155:12 disclose 163:2 181:23 discredited 177:13 discuss 11:23 discussed 9:17 100:8 106:4 130:7 141:10 186:20</p>
--	--	--

<p>discusses 170:5 discussing 140:5 discussion 26:21 42:12 46:23 58:5 164:22 distance 160:5 distinction 32:7 147:9 distortion 160:20 Distribution 186:6 District 1:2,2 177:2 disturb 124:19 divergence 161:16 divergences 162:4 divide 62:4 divided 95:5 113:6 divvy 101:12 doctor 12:23 79:9 document 13:6,13 16:9,20,21 18:3 18:4 19:3 20:7,8 25:10,22,25 26:4 27:15,21 28:4,9,14,19,25 29:6,21 29:24 30:14 31:17 33:13,20 34:9 34:23 35:4,17 36:7,15 37:23 39:15,21,22 40:9,10 41:6 42:4,23 42:25 43:4,8,12 44:12 45:23 47:5 50:12 56:19 58:13,19 59:7,19 60:9 63:6,15 85:25 87:13 89:14 103:8,10,23,24 104:10 110:16 113:2 126:15,20 134:4 136:11 137:25 143:23,24 150:2,20 156:4 164:18 165:11 166:20 167:19 168:10 170:11 179:15,15 document's 166:25 documented 84:8 documents 17:14,17,22 26:16 103:22 104:4 126:18 142:23 143:19 166:18 179:17 doing 46:8 54:9 59:10 61:19 64:16 65:22 79:12 94:4,24 97:11 111:10 131:5 136:22 145:7 152:11 160:18 165:3 172:15 174:21 192:23 Donna 1:10 2:7,11 doubt 119:10 182:7 doubts 189:13 downplay 192:25 Dr 125:6,12 126:4 131:8 134:16,17 134:21,22 135:8 141:2 168:24 176:13 drafted 53:25 55:20 drastic 183:19 draw 11:12 49:11,14 108:10,23 111:12,18 122:13 139:7,11,12 147:9 166:6 drawing 21:18 23:23 88:20 132:18 drawn 128:11 131:25 draws 72:14 74:2 drew 32:7 dried 98:16 173:14 drier 124:7</p>	<p>dries 106:6 drive 6:2 62:18,20 98:13 109:8 drives 182:3 drop 73:22 74:14 drug 75:8 drugs 52:17 dry 24:12 25:11,16,17 62:21 89:22 98:15 103:16 148:21,25 178:21 drying 21:8,16,24 23:7 24:22 due 23:25 140:23 duly 5:16 197:7 dump 73:22 dumps 74:19 76:19 duplicate 60:13 61:10,18 83:3 110:7 dye 33:4,10 127:6 dyes 23:17,20 34:22,25 35:7 38:7 45:22 178:10 179:5 184:5 dynamic 181:9,9</p> <hr/> <p style="text-align: center;">E</p> <hr/> <p>E 1:1 2:1,2,2 3:1 4:1 5:1,15,15 195:2,2 196:2,6 197:2,2 e-mail 12:9 137:25 143:17 E-S-D-A 28:3 E-Z-C-U-R-R-A 130:21 e.g 21:13 earlier 80:20 106:4 109:2 117:18 129:2 130:7 132:6 137:21 140:11 142:2 164:7 175:7 180:5 187:7 early 106:5 171:24 easier 96:18 163:15 175:20 177:25 easily 83:25 121:15 easy 91:4 effect 3:17 145:11 effectively 175:10 Egyptian 162:22 163:7 eight 61:11,13 62:3 63:7 110:6,9 112:22 113:2,6 eighteen 21:7 24:21,25 101:14 136:6 either 118:21 123:4 142:19,22,24 143:5 179:15 190:13 197:11 El-Hefny 152:24 El-Sabbah 152:24 elapsed 67:7 elapses 70:2 193:25 elected 55:22 Electrostatic 28:2 elicit 124:14,21 eliminated 117:2 empirical 18:23 employ 88:2 empty 75:20 endorsed 51:8 ends 91:2 engage 168:25 engagement 187:22</p>	<p>engaging 70:16 England 109:22 English 131:19 ensure 186:14 entered 141:22 enters 92:11 entire 7:2 70:7 94:9 156:3 entitled 134:12 137:13 138:2 139:16 166:21 169:25 179:21 entity 51:16 52:10 53:21 54:5 entries 14:25 15:14,14,18 16:14 30:7,16 42:16 59:2 128:10 entry 33:13 environment 25:11 126:17 135:17 150:2,8 164:18 165:17 173:16 193:2 environmental 165:5 166:13 equally 90:23 Erich 133:3 137:16 138:20 175:8 error 15:20 16:5 99:17,20 116:21 117:2,14,19,20 118:5 119:5 140:23 142:7 151:22 ESDA 28:3 especially 103:18 ESQ 2:5,9,14,15,19 essential 186:14 essentially 94:24 99:8 171:18 established 99:9 112:4 116:9 119:23 Esthetic 181:11 et 136:17 184:7 Evaluation 139:17 evaporate 24:14 97:21 126:22 132:13 evaporated 98:3 192:5,8 evaporates 21:24 58:6 171:16 172:19 evaporation 24:2 56:15 133:22 141:16 191:15 everybody 134:3 evidence 19:15 40:12 41:23 100:5 107:6 112:6,12 148:22 evolve 126:3 exact 41:15 67:2 exactly 9:4,13 25:8 31:23 32:24 43:13 49:4 54:15 81:6 82:8 84:17 121:24 152:10,21 167:16 171:8 184:13 187:11 192:11 exam 26:23 36:6,9,12,14,15 examination 3:7,16 5:20 26:6,9 27:16,16,17,17,18,23 28:14 29:2 29:5,11,12,17,18,19 33:11 34:14 35:10,13,20 41:5 42:4,7,10 45:5 45:11,16 46:12 47:2 48:3,3 56:2 56:24 57:6,22 58:3,18 59:8 194:15 196:3 examinations 11:23 26:12 27:20 28:8,10 32:3,4 33:5 35:18,24</p>
---	---	--

<p>51:21 56:18 examine 29:21 41:21 136:11 examined 5:18 46:13 examiner 19:3,16 Examiners 16:20,22 20:8 34:10 50:12 examining 157:25 164:10 example 32:13 40:23 58:17 61:17 96:15 122:2 137:5 150:10 154:10 155:17 159:4,7 165:9,16 175:7 examples 52:16 88:4 exceed 62:25 105:5 110:9 119:21 exceeded 112:5 120:10 exceeds 99:3 101:25 Excel 115:11 excerpt 138:3 excerpted 154:20 188:13 excise 159:15 excising 158:6 162:8 Excurra 179:20 excuse 167:2 174:2 executed 15:18 16:15 112:7 exerts 144:17 exhibit 12:19,20 143:22,25 144:2,3 144:3 153:15,21,22 156:13,14 188:9,12,13 exits 92:11 expect 7:9 98:6,19 101:22 103:8 104:25 105:19 107:25 159:13 160:24 165:11 expectation 83:3 expected 97:20 148:16 166:4 187:7 expedited 194:14 expeditious 17:5 experience 37:13,18 110:23 111:2 111:22 116:4 120:14 experienced 156:24 experiment 159:18 experiment's 144:15 expert 11:6,11 13:9 17:18,22,23 18:4 54:3 83:2,15 84:6 110:3 138:22 143:20 175:14,23 176:4 176:23 177:18 expert's 83:2 experts 101:11 116:10 138:17,21 175:3 176:2 177:17,21 explain 31:12 61:16 96:18 explained 21:19 91:24 106:4 127:14 128:25 130:14 142:2,12 explaining 68:2 Explosives 52:17 exposed 126:20 express 4:17 19:15 expressing 16:21 18:13,16 19:9,12 20:10 extensive 79:18 extent 29:20 extra 44:19</p>	<p>extract 42:19 43:5 44:8,13 48:20 65:14 68:21 72:4 74:11 111:24 extracted 42:14 47:14 69:20 75:16 168:14 extracting 49:6 extraction 65:11,13 68:6,8,11 70:18 77:13 139:20 extractor 66:13 extracts 73:16 75:17 extreme 126:19,21 127:14,15 165:9 165:16 183:13,19 extremely 21:11 25:16 101:19 105:24 108:18 119:9 121:20 132:18 142:4 Ezcurra 130:21 141:10</p> <hr/> <p style="text-align: center;">F</p> <hr/> <p>F 1:1 2:1 3:1 4:1 5:1 161:14,15,18 161:20 197:2 face 87:13,14 112:20 fact 5:12 31:5 106:14 115:9 118:20 119:21 121:24 148:13 factor 19:17 factors 21:25 facts 11:12 factually 170:12 fair 136:7 191:14 fairly 11:3 168:7 172:17 falls 29:13 false 142:5,8 false/positive 170:8,10,17 familiar 109:23 113:22 125:5,8 126:24 127:3,16,19 130:20 131:7 133:2,8,9,14 134:8 137:13 139:14 140:5,14 141:13,24 144:5,7 151:5 151:10 152:23 154:19 155:8 162:17 166:23 168:5,7,15 169:3 169:21,23 170:3,23 176:17 178:25 179:20 184:14,16 186:4 187:9 far 36:5 143:20 168:24 fast 106:7 132:14 134:6 185:5 faster 25:12,17 FBI 50:25 feasible 148:3 feasibly 32:21 federal 3:2 4:4 11:6 82:25 175:23 176:4,9,11,14 177:18 feel 157:10 fewer 44:16 field 99:9 134:18 135:13 138:12,16 162:4 Fifth 2:8 figure 45:5 46:21 48:10 116:12 154:4 Figures 139:16 file 10:17,21 17:19 85:18 108:7 filed 134:24</p>	<p>filing 3:7 final 14:23 find 29:9 34:2 57:13 60:24 84:21 88:12,18,24 91:16 100:14 124:13 192:16,19 finding 135:8 166:17 174:24 fine 8:18 12:16 17:9,12,13 130:2 163:17 finish 6:23 finished 120:6 190:20 first 5:16 12:9 13:11 62:8 63:24 66:4 75:19 76:3 80:19 85:5,15 88:5,6 117:8 138:25 144:24 147:11 155:10 157:12 159:10 176:20 180:18 181:7 189:12 191:2 Fischman 1:4 2:22 6:6 fitted 131:8 five 35:23 43:19,19,25 44:2,3,4,6,9 44:11,15,17,20,21,22,23 47:6,8,8 47:22 60:12,17 61:4,7 64:23 66:23 67:7,17 69:5,7,9,12 70:5,7 70:10 71:6,17,19 77:4 104:8 114:6 117:15 137:11 155:17,20 191:11 five-minute 91:5 153:17 flicking 79:10 flip 157:13 floating 165:24 Floor 2:8,12 flour 32:16,19,21 flow 130:8 flowing 90:23 fluctuate 168:10 focus 34:6 follow 43:9 184:12 following 75:15 77:2 follows 5:19 footnote 16:18,22,25 18:7,8,8 20:4 force 3:17 forensic 16:19,21 19:3 20:7 34:9,11 49:20 50:10,12,16,19 106:22 135:24 156:22 168:17,22 169:3 174:4 175:22 176:17 177:17 179:2,23 183:21 185:8 forget 96:8 117:18 177:9 forgot 177:8 form 3:11 138:11 format 80:17 forms 81:20 formula 38:6 94:23 178:2 179:16 179:18 180:18 181:6 183:8 formulated 25:4 formulating 11:17 formulation 25:3 30:11,18,24 37:13 40:15,18 41:2,10 48:19 108:24 181:10,13,14,19 182:22,24 184:7 formulations 25:7 30:13 31:9,25</p>
---	---	--

33:2 35:12 103:16,19 109:4
forth 7:20 54:18 197:7
forward 20:23
found 101:19 129:15 134:4 140:21
foundational 134:2 172:7,9
four 9:5 47:8 60:10,11 61:7,11 62:3
 62:5,7,8 63:7,10,10,11,11,18,21
 69:3,24 70:11 101:23,23 107:19
 113:7,8 117:15 136:19 137:11
 185:6 190:11,11
frame 175:19
framework 55:20,25
free 157:10
fresh 21:13 62:17,19 97:19,20 98:2
 98:5,11,14 109:8 124:20 145:19
 148:17 152:6
front 9:14 17:6,7,17,24 86:19,20
 87:2 131:11,22 154:22 156:22
 162:21
full 14:7 121:9 160:5
fully 106:11
function 152:14
funded 50:24
further 3:10,15 4:14 155:24 194:9
 197:10
future 5:4

G

G 5:15 6:1 7:1 8:1 9:1 10:1 11:1
 12:1 13:1 14:1 15:1 16:1 17:1
 18:1 19:1 20:1 21:1 22:1 23:1
 24:1 25:1 26:1 27:1 28:1 29:1
 30:1 31:1 32:1 33:1 34:1 35:1
 36:1 37:1 38:1 39:1 40:1 41:1
 42:1 43:1 44:1 45:1 46:1 47:1
 48:1 49:1 50:1 51:1 52:1 53:1
 54:1 55:1 56:1 57:1 58:1 59:1
 60:1 61:1 62:1 63:1 64:1 65:1
 66:1 67:1 68:1 69:1 70:1 71:1
 72:1 73:1 74:1 75:1 76:1 77:1
 78:1 79:1 80:1 81:1 82:1 83:1
 84:1 85:1 86:1 87:1 88:1,21,22
 89:1 90:1 91:1 92:1 93:1 94:1
 95:1 96:1 97:1 98:1 99:1 100:1
 101:1 102:1 103:1 104:1 105:1
 106:1 107:1 108:1 109:1 110:1
 111:1 112:1 113:1 114:1 115:1
 116:1 117:1 118:1 119:1 120:1
 121:1 122:1 123:1 124:1 125:1
 126:1 127:1 128:1 129:1 130:1
 131:1 132:1 133:1 134:1 135:1
 136:1 137:1 138:1 139:1 140:1
 141:1 142:1 143:1 144:1 145:1
 146:1 147:1 148:1 149:1 150:1
 151:1 152:1 153:1 154:1 155:1
 156:1 157:1 158:1 159:1 160:1
 161:1 162:1 163:1 164:1 165:1
 166:1 167:1 168:1 169:1 170:1

171:1 172:1 173:1 174:1 175:1
 176:1 177:1 178:1 179:1 180:1
 181:1 182:1 183:1 184:1 185:1
 186:1 187:1 188:1 189:1 190:1
 191:1 192:1 193:1 194:1 195:2
G-A-U-D-R-E-A-U 180:4
G-I-E-B-I-N-K 133:3
Garden 2:4
gas 26:17 27:4,8 92:9,11 125:10
 137:15 152:25 154:5
Gaudreau 100:24 171:20 172:22
 173:4,18 180:3,3
Gaudreau-Brazeau 180:13
GC 72:11,16 73:17 76:2 80:21
 81:11 82:2,2,7,8 91:21 93:10
GC's 84:21
GC/MS 26:18 27:4,18 32:4 33:16
 33:22 36:3,14 41:5 52:5,7,10,11
 52:13,25 53:15 56:2,12,19,22
 57:4,10 58:3,14,18,25 59:8,15,16
 59:20 60:6,9 62:2,11 63:6 67:14
 68:23 72:11 73:14,19 74:4 75:4,6
 75:7,8,9,11 76:24 77:17,19,20
 78:2,2,13,17,19 79:4,6 80:7,14,20
 82:12 85:10,14,20 86:10 88:9
 91:20 93:21 118:2 127:21 135:23
 136:16,25 139:17 146:6,7 151:8
 166:23 186:22
general 11:7 42:9 103:7 126:16
 161:23 173:12,13,17
generalized 126:9 127:9
generally 26:7 31:21 35:8 41:17
 50:6 58:3 88:14 112:10 126:14
 128:11 142:13,14 158:3 160:11
 160:15,22 166:23 170:23 172:16
 184:25 186:2,11 192:20 194:3,4
gentleman 135:10
Gerald 1:19 5:12,23 13:4 195:7,17
 196:4
gestures 6:22
getting 9:17 89:20 90:8 92:6 112:22
 116:20 117:9 145:9
Giebink 133:3 137:16
give 6:20 19:25 47:6 52:16 80:14
 81:19 88:4 109:18 115:19 119:9
 121:22 170:14
given 191:14 195:12 197:9
gives 80:21 142:18
glass 47:17
glossy 132:13
go 8:23 13:2,5,17 14:20 15:5,7,24
 16:3,11 47:22,25 73:11,21 77:17
 78:2,17 79:9 88:22 89:4,6 97:25
 114:10,15 118:16 119:2,3 120:6
 120:21 121:18 128:6 131:16
 132:19 155:16 156:7 157:16,20
 158:9 162:20 174:2 190:4
goal 142:5,6

goes 21:7,21 22:7 24:21 49:23
 54:16,20 68:23 72:10 73:12 74:20
 74:22,23,24 75:6 76:11,11,17,20
 76:22 77:4,21 78:12,20,23,25
 79:17 80:7 83:10,12 92:8 94:23
 155:18 161:9 188:22 191:8
going 7:3 9:22 12:3 22:5 47:23 49:9
 50:22 60:19 61:9 62:20 64:11
 68:13,14,20 73:18 75:2 76:10
 77:17 78:2,7,7,17 81:7,19,23
 87:22 88:8 96:24 98:16 99:22
 100:6 111:18 115:18 117:11
 121:14 122:7,12,17 129:4 132:10
 137:9,10 138:13 148:20,23
 156:25 157:22 160:3,19 161:12
 168:11 171:6 177:11 181:16,24
 182:6 183:18 186:2 191:25
 192:16,19 193:24 194:2
Gomaa 152:24
good 6:4 10:25 11:3 14:9 21:2
 117:17 118:6
goop 88:17 89:21,22
gooping 88:16 89:12 90:15
GORDON 2:10
gotten 80:25
govern 52:4
government 185:7
graduate 50:3
graph 80:22,24 81:8,9,20 84:21
 91:25 188:15
graphic 157:8,9 188:13
graphical 91:21 93:13
graphics 154:3
graphs 154:7,17 158:10,13,14
great 169:14 182:24
greater 134:5,5 167:19 182:12
Greek 95:16,17
green 144:9
Grosvenor 109:15,19 110:4 112:3
 112:15,18
group 16:19 18:12 20:7 34:9 50:12
 50:13,21,24 51:2 53:25
GUERON 2:7,9 5:7 19:7,22 37:25
 82:23 115:4 116:6 156:2 160:14
 166:8 190:6
guess 65:18 94:4 158:10 176:16
guide 156:17 157:10
guideline 18:14
Guys 19:23

H

H 95:15,19 196:6
hairs 182:11
half 59:23 101:24 104:8
hand 22:2 153:23 197:16
handwritten 16:14
handy 17:3
happen 17:2 24:13 76:10 94:6,24

<p>106:10 117:4 122:16 166:4 181:24 189:16 happened 54:14 165:12 happening 22:19 82:8 happens 22:9 72:19 79:19 92:9,12 106:5 192:25 happy 8:15 20:22 hard 45:7,8 68:7 156:6 harden 22:9 24:18 25:2 hardened 106:11 hardening 22:22,23 23:25 24:8 106:6 hardens 24:6,17 106:7,9 hardness 187:23 Harner 133:4 137:17 hate 44:4 head 131:10 hear 6:10 heard 151:3 heat 25:11 62:13,19 64:3 98:6 106:11 123:23 124:4 126:21 127:15 159:25 193:7 heated 58:10 60:22 61:13 62:15 63:10,12,24 64:6,8,12 66:4,21 67:19 71:12 77:2,3 80:10,11 85:5 85:16,20 86:15,19,21 89:7 93:21 94:18 95:4,7,19,20,22,25 96:2 98:3 109:7 113:7 123:19,25 124:24 129:21 130:5,12 140:22 145:8 149:17,18 151:15,16 155:5 160:3 162:5 191:7 192:12 heater 122:11,22 heating 124:6,16 126:7 159:23 193:9,11 heavier 90:18 heavily 129:12,25 heavy 45:7 89:23 height 64:20 94:6 held 1:22 help 24:9 128:18 182:24 helpful 181:18 hereinbefore 197:7 hereto 3:5 hereunto 197:15 high 21:11 25:10 62:23 98:20 99:4 99:4,19,25 101:15,19,22 102:11 104:16,23,25 105:6,7,7,24 107:4 108:18 109:21 110:12 112:2 118:18 119:9 121:20 123:12 124:8,14,15 131:17 134:4 136:12 160:23 190:4 higher 24:2,2 101:3,22 102:16,19 103:9 107:8,19 124:2,6 129:15 152:7 highest 167:24 highlighted 51:24 144:10,13 highly 16:14 18:22 19:13 25:15 100:5 105:11,12 106:20,21</p>	<p>107:10 108:12 132:12 178:22 hike 137:10 Historically 51:17 hit 88:8 99:18 hits 128:23 165:22 hitting 87:17 182:20 hold 86:6 93:24 139:23 156:10 holding 128:6 Holdings 1:8,9 2:11,17 hole 43:5,19 50:22 61:13,25 62:5,7 62:8,13 73:19 87:17 89:4,5 129:24 130:13 158:4 162:9 164:22 168:13 holes 42:24 87:9 129:24 home 182:4 hope 106:23 horizontal 92:5 hot 98:12,15 hotels 39:10 hotter 98:13 hour 10:9 hours 9:5 house 98:12 183:16 household 150:11 humid 178:22 hundred 99:12 hundreds 104:19 111:4 hypodermic 59:3 72:13 73:7,8,21 74:17 77:14 79:7,25 hypothesis 105:18 172:6</p> <hr/> <p style="text-align: center;">I</p> <hr/> <p>idea 15:17 24:12 48:12 62:16 68:8 79:10,20 89:15 98:2 99:16 102:9 102:10 103:18 124:3 125:21 126:4 128:4 144:23 149:17 151:25 160:22 173:24 181:5 182:5,21,23 193:3 ideal 88:24 91:3 identification 12:21 144:4 153:16 156:15 188:10 identified 10:23 30:17 35:23 36:23 84:25 147:12 180:19 183:8 identifies 80:23 identify 26:7 28:13 29:14 34:4 37:3 37:12 38:17,19 40:4,7 54:15 57:5 57:7 81:12 84:25 93:14 100:22 102:10 179:16,18 identifying 31:9 81:21 90:10 93:17 if's 193:7 II 169:25 images 10:19 imagine 83:18 165:24 immense 54:12 impact 7:23 114:18 128:2 131:24 132:8 impairs 8:7 implement 37:24 38:22,25</p>	<p>implemented 186:15 implements 40:2 implies 103:14 165:21 imply 102:15 168:8 importance 144:18 180:21 183:9 important 6:20 60:22 130:16 160:2 184:4 185:2 187:23 impossible 149:23 181:20 impression 27:24 impressions 28:21,21 improper 115:14 inability 46:23 inaccurate 182:12 inapplicable 114:2 incapsulates 22:10 inch 64:23 included 32:4 34:12 including 11:11 37:11 inconclusive 110:19,24 142:11 183:3 inconsistent 104:24 152:5 incorporated 11:21 incorporating 46:24 incorrect 139:10 increase 122:7 150:25 152:3,14 increased 187:5 increases 161:16 168:9 increasing 161:8 162:5 indentation 27:24 28:13 36:6 indentations 14:24 52:2 indented 29:3 independent 110:25 181:14 independently 162:17 Index 1:7 indicate 25:20 30:23 41:23 102:23 146:23 indicated 157:5 180:13 188:18 189:2 indication 118:3 121:19 individual 1:10,10,11 individuals 139:8 indoor 126:17 industries 55:12 industry 97:11 147:6 180:21 inferential 118:23 inferring 146:9 influence 139:19 144:16 184:2 186:12 influenced 184:9 informal 7:17 information 27:13 54:19 80:19 81:14,21 83:24 85:13 91:16 100:20 153:23 154:2 171:10 172:13 177:25 179:13 180:20 181:21 informative 172:12 informing 18:17 infrared 33:6 35:10,11 41:23 45:20</p>
--	---	--

<p>ingredients 25:6 41:18 45:12 181:23</p> <p>initial 135:8 184:2,6</p> <p>injected 73:14 76:24</p> <p>injects 72:15 73:8 74:3 75:3 79:3</p> <p>ink 21:7,9,12,20,23 22:7,9,19,24,24 23:5,11,13,14,16,19,22,25 24:12 24:17,21 25:4,4,7,7 26:8,8,10 29:15 30:6,8,11,17,18,20,23 31:3 31:6,7,9,17,18 33:9,12,15,20 34:5 34:11,20,23,25 35:4,15 36:20,21 36:21,23 37:2,3,3,8,9,12,14,21 38:5,8,12,16 39:7,8,14,21,22 40:14 41:10 42:14,14,19,22 43:2 44:6,12,24,24 45:13,17 46:24 48:17,18 49:3,13,21 50:10,16 51:3,25 56:2,4 58:7,25 59:7 61:8 62:17,24 65:14 66:14 67:9 68:4,7 68:7 69:20 71:21 72:21 74:8 78:6 79:14,14 82:4,8 87:10,13,14,17 87:23,23,24 88:8,11,14 89:2,8,16 89:20,22 90:3,13,14,15,22,23,25 92:15 97:19 98:2,6,25 99:5 101:6 102:11,23 103:23,25 104:18 105:8 106:2,3,6,9,14 108:19,22 108:23,24 109:4 110:11 111:24 116:10 124:5,19 127:5,20,25 128:8,10 129:12 131:19 134:13 135:20 136:15,18,22 137:10 138:18 139:18 140:21,24 141:17 141:18,21 142:14 145:21,22 147:16,17,25 148:14,24 151:7 152:6,15,25 154:5 159:17,20 160:6,13,24 164:10,24 165:13 166:10,14,22 167:4 169:25 174:6 174:23,24 175:2,22 176:17 177:17,23 178:3 180:19 181:10 181:11,13,13,19,22 182:22,23 183:8,23 184:2,7 185:14 186:5,11 186:12,13,19,21 188:2 189:7,7,20 189:22 190:2,2 191:14,16,24 192:2,13,16 193:20,22</p> <p>Ink's 186:7</p> <p>inked 129:13,25 130:2</p> <p>inks 23:18 25:16 26:16 30:25 32:9 34:3,15 35:21 37:7,14 41:21 42:2 44:7 48:19 52:12,14 53:2,16 88:15 99:14 103:16,19 126:9 127:9 130:22 133:4 135:22 136:16 137:14 139:6 141:12 146:19,24 148:17,21 153:13 157:25 158:3 159:3 173:14 178:8 179:16,22 180:22,23 181:16 182:6 183:10 184:3 185:4,4,11,19 185:22 189:6,15 191:4</p> <p>inks' 184:11</p> <p>inset 154:11 158:18</p> <p>Insolvency 109:20</p>	<p>inspection 44:18</p> <p>instance 129:3 132:4</p> <p>instructed 7:7</p> <p>instrument 26:12 27:25 70:22 93:24 141:12 179:22</p> <p>instrumental 52:21 134:25</p> <p>instruments 80:21 130:22</p> <p>integrated 27:12</p> <p>intend 14:12 16:8</p> <p>intended 24:9 124:18 126:18 180:23</p> <p>intention 7:11</p> <p>interact 23:23</p> <p>interacted 10:13</p> <p>interacting 9:11</p> <p>interaction 131:8</p> <p>interactions 9:7 22:5 24:16</p> <p>interested 197:13</p> <p>interim 70:4</p> <p>intermittent 71:17</p> <p>internal 64:10 65:7,8,10 66:10 94:22 96:25 97:10 117:24 185:17</p> <p>international 51:12 169:4 174:5 179:24 183:21</p> <p>interpret 106:13</p> <p>Interpretation 170:2</p> <p>interpretations 110:18</p> <p>interpreting 132:25</p> <p>interval 115:22 117:10 119:17 121:3,7</p> <p>introduced 26:20</p> <p>inventor 135:2,5</p> <p>involve 177:23</p> <p>involved 100:4 176:24</p> <p>involves 45:12</p> <p>irregular 173:15</p> <p>issue 67:23 103:15 177:7</p> <p>itemize 14:4</p> <p>items 7:19 11:11</p> <hr/> <p style="text-align: center;">J</p> <hr/> <p>January 179:4</p> <p>Jason 133:4 137:17</p> <p>Jennifer 1:4 2:22 6:6</p> <p>Jerry 13:4</p> <p>job 175:14</p> <p>JOHN 1:11</p> <p>JOLLY 2:19 5:8</p> <p>Joseph 134:9</p> <p>jotting 43:23</p> <p>journal 138:9 162:22,24 163:7 178:25</p> <p>journals 163:4,10</p> <p>judgment 111:2 129:11</p> <p>jump 15:10</p> <p>Jurgen 134:9</p> <p>Justice 169:24 171:4</p>	<hr/> <p style="text-align: center;">K</p> <hr/> <p>K 195:2</p> <p>KANE 2:3</p> <p>keep 67:15 78:9 112:9 177:20 187:21 190:7</p> <p>keeping 63:13 89:7</p> <p>key 129:19 140:25</p> <p>kind 17:19 22:18 23:18 69:10 73:18 75:10 80:14 83:12 88:24 90:8 91:2 93:10 97:9,10 99:16,21 103:17 105:23 142:15 144:16,17 146:19 159:17</p> <p>kinds 54:17</p> <p>know 6:11,15,20 8:14 9:4,10 10:25 11:25 14:19 17:15 18:2,5 22:2 25:9,17 30:6 34:19,22 35:3,19 37:4,19 41:15,17 49:6,11 51:25 61:9 64:23 66:2 69:13,18 81:6,10 81:10 82:5,10 84:5 87:22 90:6 92:19,22,22 99:12,15 101:13,15 101:20,23 102:12,21 103:18 104:6,7 106:14 107:3,5,21 108:2 108:19 111:4,11 112:23 116:21 117:3,8,22 119:24 120:24 121:14 123:9 125:2,12 126:4,6,18,19,20 128:15,19 129:8,11 131:4,5,9,10 132:20 135:14,17 136:24 137:11 137:22,23 138:8,24 140:9 141:14 142:11,15,19,22,24 143:3,5 145:12,14,16,17,18,20 146:15 147:25 148:2,7,19 149:15 150:14 151:21 155:23 159:14,16,25 160:16 161:25 162:8,14 163:14 165:18 167:20 168:5,24 169:9,15 171:5,6,21,25 174:10,12,13,21,21 174:22,23 175:5 176:7,10,12,13 176:15,20,22 177:24 178:18,23 179:12 181:6,18 182:22 183:15 183:16 184:13 186:18,18 187:16 190:10 191:11 194:3</p> <p>knowing 182:23</p> <p>knowledge 5:10 37:18 83:16 126:3</p> <p>known 93:3 102:25 103:2 104:16 104:23 111:10,11 134:5 180:22 186:11</p> <p>Koenig 127:17 151:6 152:17 166:20 169:24 186:4,5,20 188:14 189:21</p> <hr/> <p style="text-align: center;">L</p> <hr/> <p>L 1:1 2:1,5,14 3:1 4:1 5:1,15,15 195:2</p> <p>L-A-P-O-R-T-E 180:13</p> <p>L-Y-T-E-R 176:18</p> <p>lab 128:22 174:18,19,21 185:16,18</p> <p>label 37:3 153:14 188:16</p> <p>labeled 145:23 153:12 188:12</p> <p>laboratories 137:8 174:6,11</p>
---	---	--

laboratory 47:16 146:5 169:2 labs 185:8,10 lacked 177:4 lands 166:10 language 18:17 LaPORTE 1:19 5:13,23 6:1,4 7:1 8:1 9:1 10:1 11:1 12:1,19,20,22 13:1,4,5,6,25 14:1 15:1 16:1 17:1 18:1 19:1 20:1 21:1 22:1 23:1 24:1 25:1 26:1 27:1 28:1 29:1 30:1 31:1 32:1 33:1 34:1 35:1 36:1 37:1 38:1 39:1 40:1 41:1 42:1 43:1 44:1 45:1 46:1 47:1 48:1 49:1 50:1 51:1 52:1 53:1 54:1 55:1 56:1 57:1 58:1 59:1 60:1 61:1 62:1 63:1 64:1 65:1 66:1 67:1 68:1 69:1 70:1 71:1 72:1 73:1 74:1 75:1 76:1 77:1 78:1 79:1 80:1 81:1 82:1 83:1 84:1 85:1 86:1 87:1 88:1 89:1 90:1 91:1,12 92:1 93:1 94:1 95:1 96:1 97:1 98:1 99:1 100:1 101:1 102:1 103:1 104:1 105:1 106:1 107:1 108:1 109:1 110:1 111:1 112:1 113:1 114:1 115:1 116:1 117:1 118:1 119:1 120:1 121:1 122:1 123:1 124:1 125:1 126:1 127:1 128:1 129:1 130:1 131:1 132:1 133:1 134:1 135:1 136:1 137:1 138:1,3 139:1 140:1 141:1 142:1 143:1,19,25 144:1,2,3,3 145:1 146:1 147:1 148:1 149:1 150:1 151:1 152:1 153:1,15,21,22 154:1 155:1 156:1,12,14,16 157:1 157:5 158:1 159:1 160:1 161:1 162:1 163:1 164:1 165:1 166:1 167:1 168:1 169:1 170:1 171:1 172:1 173:1 174:1 175:1 176:1 177:1 178:1 179:1 180:1 181:1 182:1 183:1 184:1 185:1 186:1 187:1 188:1,9,11,12 189:1 190:1 190:25 191:1 192:1 193:1 194:1 194:11 195:7,17 196:4,8 LaPorte's 180:12 large 12:10 98:7 larger 154:17 Larry 135:10 Lausanne 168:20,21 law 4:19 7:16 83:14,15 179:2 Layer 26:14 27:2 42:12 leads 26:17 learned 126:6 leave 177:11 leaves 116:24 leaving 24:2 90:25 left 22:10 24:3 92:4 144:10 153:23 154:11 Legal 170:2	length 129:17 let's 16:11,12 26:21 64:25 67:15 69:2,23 74:5 85:6 91:5,6 96:8,18 105:16 106:16 107:3 112:25 123:18 140:10 143:25 147:13 153:14 156:9,12 178:20 190:19 letter 88:21,22 129:3,16 letters 88:11 letting 37:19 level 21:5 24:19 96:11 102:13 103:3 103:25 105:24 107:4 108:18,21 110:17 112:2,5,15,21,24 117:17 119:25 120:7 139:5 142:9,11,18 175:4,6 levels 21:10 45:9 101:19,21 106:14 107:17,24 108:2 114:3 119:21 121:11,19,21 124:2,15 134:4 136:12 137:9 147:8 181:20 182:25 Lexington 2:17 lift 90:24 lifted 128:3 lighter 90:17 lightly 124:5,19 130:2 liked 125:21 likelihood 37:9,15 88:22 limit 142:3 limitations 180:18 limited 43:21 109:19 138:17 140:8 limits 140:2,3 line 88:21 90:2 129:6,17 136:13 144:13 154:24,24 155:3,4 156:3 158:17,20 159:9,20 161:4 lines 88:17 128:11,17,23 129:16 139:19 158:6 162:8 189:20 193:4 liquid 24:10 66:15 67:9,22 68:8,22 71:20 72:15 78:6 79:15 Liquidation 109:20 listed 29:2 30:14 36:15 138:5 154:3 lists 168:23 literally 86:24 literature 56:5 75:5 97:9 102:21 116:9 167:6 litigation 4:20 191:21 little 12:15 16:24 42:3 69:2 70:21 70:22 86:23 100:6 101:12 103:5 104:11 107:3 137:4 145:24 148:10 154:9 155:24 167:15 181:18 187:20 189:18 193:16 194:8 LLP 2:3,7,10,16 locations 4:10 logically 152:4 London 109:22 long 54:21 75:8 129:23 long-term 133:22,24 longer 150:25 171:15 172:19 193:13	look 29:22 30:3 32:21 35:14 41:22 45:13 60:19 80:22 88:10,11 93:6 98:24 118:2 123:18 136:10 146:16 156:18,19 164:4 192:7 looked 102:25 128:15 looking 15:25 17:11 42:5 56:14 57:22 83:2 85:24 107:18 126:12 139:4 181:11 189:12 looks 49:13 88:18 129:12 158:24 loss 95:12 96:7 97:17 98:20 99:3 101:24 102:17 103:9,15 104:14 104:25 105:21,25 106:13 107:14 132:25 135:3 150:19,25 151:13 152:2,7,13 166:17 167:5,18 189:15 191:3 193:15 lost 95:6 110:8 155:19 168:9 lot 11:25 22:4 62:18,22 75:6 98:19 100:12 104:5 106:8 109:12 114:7 114:8 118:4,21 119:23,24,24 126:6,11 130:3,14 134:24 135:7 142:18 145:23 146:8 157:21 158:5 160:5,20 163:3,10 172:3 177:25 178:13 182:8,9 187:16,19 192:10 193:2 lots 62:16 80:25 88:3 124:21 louder 6:12 low 112:15,21,24 139:5 160:23 187:25 lower 103:25 105:25 lunch 91:10 luncheon 91:11 Luxor 161:20 Lyter 176:18
M		
M 195:2 machine 69:10 77:19 78:3,8,13,17 78:19 81:19 85:10,15 Magdalena 130:21 141:10 magnifying 88:12 Magnolon 152:17 166:21 Magnolone 151:6 main 23:19 maintain 140:19 185:10,14 maintains 185:16 major 41:24 majority 54:23 makeup 92:13 making 79:25 87:16 129:11,11 130:10,11,18 175:17 182:12 187:17,18 Malek 109:5,10 mandatory 55:11,12 manifestation 173:17 manner 4:16 MANSUKHANI 2:10 manual 70:17,18,20 77:12 manually 70:16 71:18		

<p>manufactured 37:10 145:20,21 manufacturer 38:3,17,20 148:5 178:19 181:22 manufacturers 37:11 38:4 manufacturing 148:6 178:3 March 16:16 Maria 139:15 144:6 mark 12:18 143:25 144:2 156:12 marked 12:20 143:21 144:4 153:15 153:22 154:11 156:14 188:9 marriage 197:11 mass 26:18 27:5,8 81:12 92:12 match 31:25 34:16 46:19 matches 33:3 matching 31:24 33:2 40:14,18 109:4 Mate 37:11,21 38:25 39:18 40:11 material 9:17 10:22 11:16 27:14 79:14 92:8 144:10 153:24 180:24 materials 11:20 23:22 25:18 35:3,8 51:14 52:18,18 162:3 mathematical 94:14 mathematically 115:13 Mathew 6:5 matrix 188:2 matter 7:14 9:8,19 10:5,12 11:18 12:6 13:10 14:5 45:3 60:18 109:5 109:10,15,18,20 110:4,5 112:3,15 112:18 122:13 164:20 176:3 189:8 197:14 matters 110:2,2 129:23 130:8 MATTHEW 2:5 maximum 136:18 mean 6:19 14:6,7 17:19 25:5 29:20 31:12,14,17,18 34:6 37:8,23 41:3 41:12 46:2 57:7,14 82:24 83:12 83:15 84:10 86:21 87:8 92:7 93:2 94:7 97:8 105:22 107:13 112:21 114:17,22 115:17 119:22 132:3 132:16 141:25 142:5,13 150:9 151:10,20 159:10,18 160:15 166:9,19 168:2,3 172:9,11 173:2 173:7 175:5,12 176:6 177:20 186:19 189:5,10,12 191:21 193:13 means 18:20 31:15,22 32:10,24 44:15 106:21 131:8 149:13 172:10 measurable 171:16 172:20 measure 20:13 58:9 62:14 64:5,20 64:21,22 192:4 193:22 measured 152:22 measurement 54:4 64:7 65:5,6,20 68:12 79:11 92:6 99:20 106:17 117:2,14,20 118:5 119:5 123:10 151:22 193:17 194:6 measurements 64:14 99:22 113:16 114:18,25 116:25 117:21 118:11</p>	<p>118:13,17 130:10,11 139:2 151:23 168:12 175:18 187:5,19 measures 140:4 measuring 65:3 146:3 159:22,24 mechanism 128:20 medical 8:2,6 179:2 medication 7:22 meeting 4:12 133:10 memory 8:7 mention 121:20 mentioned 11:21 23:12 49:5 50:7 61:3 84:13,15 91:13,20 106:18 108:6 127:24 132:6 135:19 159:15 163:20 mentioning 137:7 MERCEDES 2:15 Merit 139:17 metaphorically 182:10 meter 54:5,6,13,16,20 method 58:8 75:10 111:23,25 137:3 139:17 141:19 145:6 158:3 174:7 177:6,8 180:17 181:8,9,9 methodology 58:11 123:18 125:3 135:3 156:25 160:10,18 162:7 174:16,18 methods 34:11 49:20 50:10,15,19 130:22 134:13 140:19 141:11 157:17 167:4,5 179:22 181:12 183:24 193:23 microliter 49:15 72:14 73:13,13,22 73:23 74:3,16,18,23 75:3,17,18 76:13,15,23,23 77:12,25 78:4,7 78:16,25 79:5,24 80:4,7,8 microliters 49:11 67:10,18 68:16 72:4,20 73:5,15,17 74:6,11,14 75:15 77:6,11,15,16 78:10,12,20 79:3 microphone 6:12 microscope 29:22 90:12 microscopic 26:9 27:16 29:12,17,18 34:14 35:18 36:2,9 88:25 129:10 mid 133:18 171:24 middle 88:20,25 90:8 migration 149:3,4 millimeter 59:23,23 61:25 millimeters 59:25 million 107:24 108:5,15 mind 16:7 112:9 169:22 minimize 60:14 142:4 187:4 Minimum 134:12 135:19 183:22 minor 120:22 minus 95:3,14,15,22 minute 77:4 minutes 9:14,15 10:6 62:14 63:25 66:23 67:7,17 69:5,7,9,13 70:5,7 70:10,11 71:6,17,19 81:9,11 82:12 92:20 93:7 94:3 123:19 miscellaneous 52:17</p>	<p>mischaracterizing 116:7 misreading 28:19 missed 15:4 missing 14:22 15:9 97:23 129:19 misunderstanding 146:10 Mitsubishi 1:8,9,9 2:17 Mitsubishis 2:11 mix 69:14,21 71:4 mixed 38:7 67:21 70:14 mixture 25:5,6 57:2 65:13 model 126:8,14 127:9 Modeling 127:4 Modern 141:11 179:22 molecular 22:18 81:14 molecule 81:13,15,21 85:2 93:10,14 93:15,18 molecules 92:14 93:9 moment 105:17 109:18 113:2 153:10 156:9 190:21 momentarily 12:4 monitor 193:19 monitoring 167:4 months 21:7,13 24:21,25,25 101:7 101:13,14,15 102:12 104:5,8,8 105:11,12 112:7 136:5,5,6,6,6,17 136:19 137:12 155:13,18,23 158:23 161:9 170:19 171:15 172:19 173:14 185:6 morning 6:4 Mountain 6:2 move 6:11,24 8:20 moves 74:18 76:5,12,14 moving 135:5 165:15 187:21 multiple 21:25 27:9 37:10 38:4 40:18 52:11 53:5,7 75:20 77:22 190:8,11 193:19 Musacchia 1:23 4:23 5:17 197:4,19</p> <hr/> <p style="text-align: center;">N</p> <hr/> <p>N 1:1,1 2:1,1,2 3:1,1 4:1,1 5:1,1 95:15,17,17,19 195:2,2 196:2 N-G 158:24 nail 68:6 name 5:22 6:4 51:16,19 131:2,4 135:10 176:20 named 176:18 Nanograms 158:25 narrowing 105:9 natural 99:21 127:5 nature 154:7 near 62:8 122:16 123:4 necessarily 24:4 45:22 54:24 55:15 87:5 101:4 102:8 103:11 105:22 128:12 129:7,18 135:4 151:20 172:5 necessary 44:22 71:5 110:10 115:24 need 12:14 14:15 17:14 18:5 48:9</p>
--	---	--

61:12 84:3 114:9 168:4 181:5 194:13 needed 44:7 needle 72:13 73:7,8,11,12,21 74:17 77:14 79:16 needles 79:8 needs 79:13 180:19 183:8 negative 155:15,17,18,20,22 neglected 177:9 neither 115:7 never 43:19,20 44:3,4,5 103:3 106:23 112:3 120:8 133:10,17,19 137:23 142:7,7,13 151:3,3 166:4 169:21 new 1:2,24 2:4,8,13,13,18,18 5:18 6:24 26:20 47:14 72:7,9,10,19,20 73:9 74:6 177:2 197:5 newer 103:9 nice 88:18 91:3 182:13,14 Nicholas 1:9 2:12 NICOLE 2:9 nine 136:6 non-ballpoint 30:8 36:21 Non-Party 1:20 non-recycled 132:5 nonheated 85:21 normally 107:20 Notary 1:24 3:17 5:17 195:23 197:4 note 124:25 noted 43:17 notepad 143:2 notes 10:17 11:2,4 12:2 43:14,23 47:23 59:21 60:2,4,7 82:19 83:23 84:3,6,23 91:18 108:8 143:15 Notice 1:21 notification 9:21 number 8:9 10:18,18 11:11 15:16 30:23 39:4 47:7 49:4 60:11 61:7 63:5 64:5 67:6,16 69:3 79:6,24 80:4 84:13 99:9,24 107:23 108:15 110:20 111:10,12 114:16 116:3 116:10 138:17 183:7,9 numbers 86:10 96:17 110:23 114:13 116:13,16,18 117:6 123:16 139:3,4 155:14	109:14 110:13 115:3,4 116:5,6 117:7 118:15,24 119:19 120:17 121:8 122:19,25 123:6 125:25 131:14 150:12 151:19 152:8 160:14 166:7,8 169:8 170:25 190:6 191:17 objections 3:11 7:6 objective 175:20 observations 46:25 59:14 observe 28:20 observed 104:23 184:9 obtain 180:19 obtained 85:4,15 113:19 114:4 140:2 obviously 33:8,17 34:17 132:20 145:2 155:22 165:15 166:2 occasionally 137:9 occur 149:25 167:18 October 1:15 195:9 197:16 offer 16:8 offered 55:5 office 183:15 offices 146:18 oh 64:21 88:3 105:10 128:25 okay 9:16 12:17 17:5 18:21 19:13 20:11 21:4 23:24 24:19,24 25:20 26:23 27:15 28:23 31:2 32:6 33:12 34:19,22 35:16 37:22 39:11 41:5 42:18 46:10,14 47:21 48:2 52:19 53:4 55:2 56:23 59:4,6 61:20,24 64:25 65:24 66:3 69:2,9 72:18 78:9,16,22 83:5 86:8,23 87:12,19 88:4 92:18 95:13,25 96:5 97:25 98:5,9,18 99:7 107:12 111:6,13 115:16 121:22 122:3 124:22 127:23 128:10 129:14 131:7,23 135:18 139:7,14 141:9 146:16 149:2 150:19 152:23 153:5,25 154:23 155:3 161:23 162:3,12 163:6,12 164:6,9,16 166:2,16 167:12 170:7 171:10 178:14 179:11 183:4 190:13,22 192:21 193:22 old 2:4 21:14 62:19,25 99:6,14 101:7,24 102:12,24 103:3 104:8,9 104:17 105:8 106:15 107:6,22 108:3 110:11,16 120:10 136:11 136:17,25 137:12 145:18,18 167:19 168:10 170:12,13,16 192:4,6 older 103:24 161:13 166:18,19 187:6 Oliva 1:9 2:12 once 9:13 24:11 29:17 34:2,6,13 35:5 41:13,24 47:13,16 49:13 55:10 70:9 71:11 73:18 74:17 79:13,20 90:9 94:20 98:14 103:22 109:7 124:6 129:9 132:22 141:25	149:16 154:21 162:19 165:22 177:20 182:9,21 185:24 onsite 44:18 onward 161:9 open 54:21 operating 84:11 operational 137:7 168:25 169:2 opinion 14:8 18:18 28:24 opinions 11:13,18 12:5 14:2,4,7,10 14:11 16:8 21:5 28:5 138:23 opposed 164:11 183:3 opposing 84:5 176:25 opposite 87:17 161:15 optical 26:12,23 27:17 32:3 33:5 34:14 35:9 36:2,11 optimal 124:17 optimize 141:5 optimized 124:9 125:20 order 9:12 29:20 41:14 42:13 58:17 58:24 60:14 64:9 67:25 83:14 98:18 102:17 Oreo 40:23,23 organic 20:14 23:4,6,9 33:14 165:20 organization 50:18 51:10,20 53:12 53:22 55:3 organizations 185:13 originally 50:23 181:20 outcome 197:14 output 81:11,20 84:25 85:9,14,19 91:19,21,24 outside 106:14 128:22 overall 10:20 41:4 104:24 123:3 overly 48:21,21
P		
P 2:2,2 5:15 P-Y-R-I-D-I-N-E 42:21 p.m 194:16 package 145:19 page 13:11,12,18,20,23,25 14:3,21 14:23 15:10,21 16:2,2,11 36:17 49:22 86:12,16,18,22,25 87:4,5 116:18 128:23 132:24 156:20 157:9,14 158:13 196:3,8 pages 30:7 Pain 154:5 paint 98:15 paired 130:18 pairing 113:19,20 pairs 129:24 141:8 panel 144:14 146:17 153:23 154:11 155:17,19 158:16,18 159:4,7 161:3,14,15,20 panels 159:2 160:11 paper 21:10,21 24:10,11 25:14,14 25:15,19 37:11,21 38:24 39:18 40:11 44:25 48:18 58:6,7,25 59:7		

<p>66:14 68:18 87:2,6 89:24 101:5 125:8,14 127:3,8,19 128:3 130:20 130:23 131:5,9,11,13,18,22,23,24 132:2,3,5,8,9,11,11,12,12,13,15 132:17,21 133:7,15,17,18 134:8 135:18,20 136:14 137:13,20,22 138:4,6,11 139:9,16,16,20,25 140:7,13,17 141:9,9,12,15,22 142:25 143:3,5,6,8,9,18 144:5,11 144:16,17,25,25 145:8,13,16,18 145:19 146:8,9,12,18,18,20 147:3 147:5,6,7,13,16,23 148:4,5,11,13 148:14,18,21,24 149:6,8,15,20 150:13,16 152:16,18,23 153:3,8 154:3,5,19,22 157:7,25 158:6,7 162:13,15,20 164:11,23 166:14 168:5 169:22 170:14,24 172:4 175:8,15,17 177:14 179:4,20,23 186:5,10 187:12,13 188:14 192:5 papers 124:23,25 125:2,3 126:10 126:12 127:11 140:5 148:21 171:25 172:3 192:3 paragraph 15:13 28:5,17,18 29:14 29:16,25 30:22 36:8,11,16,17 42:5,6 56:13 57:21 58:23,24 157:16 paragraphs 28:16 41:6 57:17,18 58:2,15 parallels 108:24 parameter 167:23 170:9 186:15,19 187:3 Parameters 127:21 151:8 166:22 186:7,22 paraphrase 65:25 paraphrasing 93:2 97:18 parenthesis 20:16,17 Park 2:12 part 9:6 10:21,25 24:7 32:11 49:19 50:2,5,25 60:22 70:17 87:12 88:14 89:19 97:21,23 99:21 105:14 111:19 128:19 130:3 135:5 144:10 146:17 153:24 157:24 165:4 169:25 172:5 181:3 181:15 186:5 189:22 partially 167:10 participating 4:11 particular 44:18 47:14 62:2 81:14 92:15 98:23 100:13 101:20 107:17 108:22 121:6,24 138:15 139:8 149:22,23 168:19 192:16 particularly 30:2 parties 1:21 3:5 4:4,17 197:12 parts 181:3 passes 54:23 Patricia 133:3 137:16 pattern 121:25 PE 93:3 95:14,15,16,21,22,22,25 96:22 98:3 140:20 141:21 143:11</p>	<p>160:12 167:5 171:15 172:19 180:14 187:6 PE-2 23:2 98:7,19 143:7,18 164:10 165:10,17,18 166:14 peak 96:16,16,20 peaks 96:19 180:11 pear 171:14 peer 53:8 56:8 84:14,18 100:15,19 133:6,10,17 137:18 162:25 163:3 163:8,9,10,20,22,24 169:16,19 171:2,5 175:15 peg 105:10 PEH 95:14 pen 38:13 39:16 90:16,18,25 95:14 95:14 125:9 128:6 130:8 139:18 146:19,24 148:14 152:25 154:12 154:13 158:18,20 159:4 161:4,21 178:3 pending 8:19 pens 39:9 178:21 179:6 people 54:22 64:17 90:7 137:6 138:13 156:22,24 percent 62:22 63:2 99:2,3,7,15,18 99:23 101:3,6,10,25 102:22 103:4 105:5 107:2,5,7,9 108:11,20 109:7 110:6,9,10,14,20 111:8,13 111:14 112:5,13,22 114:4,5,6,11 115:25 116:2,8,11 117:5,6,18,21 118:7,8,11 119:4,21,22 120:7,10 121:11 123:16,17 161:25 162:2 167:18 168:9 170:5,15,18 183:2 186:24 189:2,15 190:3,4,14,16 percentage 95:6,9,10,11,13 102:16 105:21 107:14 167:23 170:9 187:4 188:18 perfect 20:24 137:5 perfected 137:4 perform 25:24 26:3 28:8 34:21 37:20 42:14 45:4 59:19 60:9 62:10 performed 20:13 25:21 26:5 27:21 31:11 35:20 46:11 51:22 56:19 59:15 60:13 110:7 141:23 149:19 performing 104:18 111:3 perfume 165:10 perfumes 150:15 period 21:6 24:20 25:2 69:25 77:4 141:22 185:24,25 193:13 periods 71:18 102:6 150:25 191:20 permitted 4:7 person 134:17 perspective 22:22 38:6 170:2 persuasive 19:16 pertains 30:2 pertinent 121:24 pharmaceuticals 52:18 phenoxyethanol 20:20,21 62:18,21 96:20 180:14</p>	<p>phone 10:7,10 photographs 10:19 46:12 phrase 18:21 178:7 physical 17:3 27:22 28:13,25 29:18 32:2 34:13 36:2,6 physically 4:25 29:21,23 pick 39:10 picked 73:25 pics 73:12 piece 21:21 70:19 86:25 pieces 67:15 148:4 149:14 pigments 23:18,20 34:23 pipette 49:11 place 62:6 72:7 109:17 129:22 145:21 152:10 155:19 placed 21:21 74:15 76:3 placing 75:19 Plaintiff 1:5 2:3 6:5 Plaintiff's 143:21 plate 46:21 49:9 57:2 platform 4:12 Plaza 2:12 please 5:22,24 6:10,15 8:14 12:11 12:18 13:12,19 14:18 15:11 18:2 20:19 40:17 61:22 144:2 153:10 153:14 156:16 157:10 161:20 plot 192:8 plots 131:8 plotted 193:23 plug 47:10 48:7,11 plugged 115:11 plugs 42:15,19,24 43:11 44:16 47:4 47:22 48:4 56:25 58:8,25 59:7,18 59:23 60:5,8 61:4,21,22 63:5,7,8 63:15,18,21 68:18,19 69:3,24 87:15 113:6 129:24 plunger 74:17 plunges 74:17 plus 15:15 68:17 96:21 99:15 158:6 point 15:8 20:23 22:6 34:15 40:15 40:24 54:18 90:21 93:11 95:9 98:11 108:5 148:9 161:8 182:3 189:25 pointed 190:4 pointing 142:16 184:18 points 123:5 140:6 155:24 polish 68:6 politely 138:13 polymerization 21:23 22:14,15,20 24:16 Population 186:8 populations 186:14 portion 43:4 45:17 72:11 81:12 85:2 90:2 91:21 93:17 164:23,24 165:13 167:13 portions 156:17 157:6,11 position 126:8 positive 81:3 142:5,8</p>
--	--	--

<p>possibility 41:20 122:14</p> <p>possible 38:12,15,21,23 39:2,24 40:4,12,20 89:8,16 106:25 117:3 128:21 140:23 150:13,17,18 165:4</p> <p>potential 40:8 127:4 142:4 164:17 165:7</p> <p>potentially 6:11 22:4 23:3 33:24 68:21 185:4</p> <p>practical 167:7 191:20,22</p> <p>practice 83:14</p> <p>precise 32:10 47:7 79:11</p> <p>precision 65:22 182:18</p> <p>precludes 19:17</p> <p>predictor 168:3</p> <p>prefer 12:24,25 44:21,22,23</p> <p>preferred 12:22</p> <p>preformed 11:24</p> <p>prep 70:21 77:13</p> <p>preparation 8:24 9:6,20 10:14</p> <p>prepare 9:12</p> <p>prepared 13:15 138:12</p> <p>preparing 9:3 10:2</p> <p>preprogrammed 75:4</p> <p>presence 4:25 184:10</p> <p>present 2:21 4:4 6:22 14:13 34:5 35:4 60:16 61:9 89:14 107:16 174:6</p> <p>presentations 102:24</p> <p>presented 100:10 133:10 192:10</p> <p>presenting 123:8</p> <p>presently 17:21</p> <p>pressure 88:19,23 90:11,18</p> <p>pretty 37:14 79:18 95:20 110:15 118:6 123:12 133:25 165:22</p> <p>previous 127:24 141:22</p> <p>previously 10:8 59:17 141:10 185:7 186:21</p> <p>primary 66:13</p> <p>Primavera 2:14 5:6,9,14 18:25 19:6 19:21 38:14 40:3 48:25 54:10 82:22 87:7 105:3 110:13 115:3 116:5 117:7 118:24 119:19 120:5 120:17 121:8 122:19,25 123:6 125:25 131:14 150:12 151:19 152:8 166:7 169:8 170:25 190:23 191:17 194:13</p> <p>print 145:21</p> <p>printed 85:17 94:11</p> <p>printer 143:4</p> <p>printing 145:22</p> <p>printout 85:11 143:4</p> <p>prior 9:20,21 162:12</p> <p>privileged 7:12</p> <p>privy 147:3</p> <p>probability 62:24 99:4 100:2,3 101:16 102:11 105:6 110:12</p> <p>probable 16:14 18:22 19:14 100:5</p>	<p>105:11,12 106:20,21 107:10 108:12</p> <p>probably 10:8 52:20 54:14 69:13 99:11 126:21 133:13 140:9 158:11 172:15 177:24,24</p> <p>problem 180:19 183:8</p> <p>procedural 88:2</p> <p>procedure 4:5 8:14 11:7 52:21 77:14 84:11 174:22</p> <p>procedures 177:4</p> <p>process 21:8,17,18,22,24 23:5,7,23 23:24 24:8,14,22 42:6 43:9 45:12 47:11 49:19 53:23,24 54:21 55:9 55:22 56:24 57:5,8,10 60:25 61:15 70:15,18 71:13,16 73:25 74:24 75:18 79:18 81:23 82:16,17 82:20 83:21 87:12,19 97:4 106:3 125:17 132:10 143:10 148:7 160:2 193:12</p> <p>processes 54:17 78:18,21 127:5</p> <p>processional 1:10</p> <p>produced 133:20</p> <p>production 147:7</p> <p>products 150:11</p> <p>professional 1:10,11 84:9,13</p> <p>program 82:12 92:21</p> <p>programmed 73:20 75:17 77:11</p> <p>promulgated 50:20 52:25</p> <p>promulgates 53:14,23</p> <p>pronunciation 20:18</p> <p>propagation 186:25</p> <p>proper 138:15</p> <p>properly 160:18</p> <p>Property 109:19</p> <p>proportion 24:3 98:7</p> <p>propose 91:9</p> <p>proposed 167:6</p> <p>proposition 172:21</p> <p>proves 110:15</p> <p>provide 7:9 11:10 27:13 32:12 83:24</p> <p>provided 55:21 80:17</p> <p>provides 81:13</p> <p>proximity 119:7</p> <p>public 1:24 3:17 5:17 54:21 195:23 197:4</p> <p>publically 100:11 193:5</p> <p>publication 56:10 125:12 138:9,10 139:21 169:7,15 171:14,17,19 172:23,25 173:3,6,7,24</p> <p>publications 53:5,8,9 84:14,16,19 100:16,20 141:19 187:8</p> <p>publish 55:15,23 134:6</p> <p>published 50:13 51:3,7,8 52:7,9 55:10,11 56:5,9 83:10,11,11 100:9,15,17 101:2,5 123:22 133:6 133:11 137:23 150:13 162:21 163:21,23 164:3 168:19 169:11</p>	<p>169:13 171:3,4 179:4 191:3</p> <p>publishes 55:14</p> <p>publishing 55:16</p> <p>pull 12:10 73:4 137:24 139:22 188:7</p> <p>pulling 79:22</p> <p>pulls 66:13 74:18 79:2,13</p> <p>pumps 76:18</p> <p>punch 42:24 73:4 87:9,16,24 89:4,5 130:4,5</p> <p>punched 43:5</p> <p>punches 43:19 61:14 62:2,6,7,9,13 72:13 130:13 158:4 162:9 164:23 168:13</p> <p>punching 87:11</p> <p>purported 16:16</p> <p>purpose 4:19 48:6 55:7 71:24 79:5 79:25 80:5 182:2</p> <p>pursuant 1:21 4:4 51:22</p> <p>push 70:23</p> <p>pushing 70:13</p> <p>put 20:4 49:9 54:18 62:4,9 63:19,21 65:11,12,18 67:10 68:9,22 69:16 69:20 70:24 71:7 76:10 77:16,18 88:23 98:11 99:24 111:23 115:15 143:24 149:15 156:25 163:18 192:3</p> <p>puts 66:14 73:17</p> <p>putting 56:25</p> <p>Pyridine 42:20 50:5,7</p>
Q		
<p>Q1 15:18</p> <p>Q12 15:20,22 16:6 28:4,9 31:6,18 35:2,19 36:18 39:15,22 40:10 46:17 108:23 142:23 143:4 179:14</p> <p>Q8 15:19,21 16:5,15 25:22,25 26:4 27:15,21,23 28:11,14,19,25 29:6 29:24 30:2,5,14 31:17 33:13,21 34:5,20,24 35:2,4,17,19 36:7,15 36:18,20,20,22 39:22 40:9 41:6 42:4 43:8,12 44:12 45:24 46:10 46:15 47:5 56:19 58:13,16 59:7 59:19 60:9 63:6,16 85:16,20,21 86:3,3,4,6,16 108:22 113:10 142:23 143:2 179:14</p> <p>Q80 132:20</p> <p>qualified 138:14 175:11,13,14</p> <p>qualify 183:13</p> <p>quality 56:21 80:25 91:13,17 143:10 177:4,9</p> <p>quantification 139:18 144:18</p> <p>quantitation 97:12</p> <p>quantities 187:7</p> <p>quantity 62:12 94:13,25 95:3 129:15 184:7 188:18</p> <p>question 3:12 6:18,19,25 7:2,8 8:19</p>		

<p>8:19 9:23 13:22 38:11,11 41:10 83:13 85:7 103:13 117:13 119:12 158:15 164:13 165:23 175:20 178:6 189:9,22 190:9,17 191:23 questioned 135:23 180:22 questioning 156:3,7 164:19 190:21 questions 6:8,10,14 8:13 54:11 67:25 129:20 146:8 190:25 194:9 quick 190:19 quickly 107:18 157:17 165:22 quotation 180:25 quote 140:18,18 170:14 180:17</p> <hr/> <p style="text-align: center;">R</p> <hr/> <p>R 2:2 5:15,15 95:9,11,13 170:8 186:24 187:3 188:18 197:2 rabbit 50:22 73:19 raise 167:7 raising 129:21 189:25 ran 33:23 85:15,23,25 91:13,17 113:8 117:25 144:25,25 146:5,14 range 33:25 116:24 124:13 155:15 rarely 46:8 189:14 rate 56:14 99:17 130:8 164:10 171:16 172:20 191:15 rates 103:17 184:3,9 ratio 67:3 95:12 96:7 97:18 98:20 99:3 101:24 103:9 104:14 105:2 105:21,25 106:13 107:14 135:3 140:20 150:19,25 151:13,15,16 152:2,7 161:10 166:17 167:18 168:9 189:16 191:6,8 192:18 193:14,15,24 194:8 rationale 165:3 ratios 32:21 41:15,20 103:15 132:25 152:14 191:3 192:20 reached 28:24 read 14:14,15 15:20 16:6 17:7 58:23 80:15,17,18,21 84:21 85:4 85:11 93:13,20 94:10 131:9,15,18 136:4 140:18 151:3 153:6 156:4 162:25 177:2,3 184:24 187:10 195:8 reading 15:15 18:3 42:16 181:8 189:23 190:5,15,18 ready 156:20 157:12 real 96:17 107:18 157:17 really 29:19 40:13 43:20 44:5,7 49:10 54:3 60:18 62:3 68:6 80:20 94:8 98:12 105:13 110:18 117:19 119:20,23 124:18 132:14,16 135:9 146:7 160:20 167:6 173:13 181:18 191:23 reason 79:12 113:25 reasons 11:24 21:19 49:5 59:12 185:3 recall 44:5 91:14,22 153:7,8 162:14 162:19,20 163:5,15 164:19 177:7</p>	<p>receptacle 74:15 recess 91:8 153:20 156:11 190:24 recipe 32:18 41:4 recipes 41:11 recognize 13:6 recommended 136:17 record 4:22 5:22,25 85:14 94:5 157:2 195:11,12 197:9 recorded 4:15 10:2 recording 4:16 records 9:14 recycled 132:5 142:24 143:3,5,6,18 146:12,17 148:11,13 red 154:25 155:4 158:19 161:4,11 REES 2:10 refer 20:16 22:17,23 26:6,22,25 27:4 28:3 43:14 83:17 181:12 reference 37:5 38:15 48:23 83:9 151:9,11 186:7 referenced 49:21 57:19 65:9 84:9 97:5,7 100:15,18 108:16 109:23 109:25 110:2 112:18 152:16 164:7 173:19 180:5 186:13 references 83:23 referencing 151:12 152:20 referred 20:14,15 26:12 27:23 referring 15:2 17:14,21 20:25 22:21 36:20 50:15 56:8 95:8 97:14 106:17 108:15 120:23,24 177:12 184:17 refers 42:23 127:6 180:15 reflect 160:11 reflected 143:13 165:11 reflecting 161:20 reflects 111:7 161:4 Regardless 115:16 region 178:17,17,18,18 179:7,7 regulatory 53:24 REISBAUM 2:7 related 197:10 relating 144:15 relationship 39:7 relative 60:19 64:7,16 65:5,22 132:22 145:6 184:6 relatively 98:20 reliable 140:3 167:23 relied 11:12,17 101:3 relies 101:5 rely 84:7 remains 192:18 remedy 156:10 remember 43:13 94:22 110:4 112:14 113:5 163:16 164:3,4 171:23 175:8 remote 4:10 remotely 4:6 remove 43:11 47:24 59:6 61:25 67:9,10,17 68:21 69:20</p>	<p>removed 42:15 58:25 62:3 68:17 78:23,24 79:15 90:4 140:24 149:7 157:22 158:2 remover 68:6 removing 89:9 158:7 159:16,19 repeated 63:11 rephrase 6:16 164:13 replicate 60:25 82:20 83:6,20,25 84:4 report 10:16,23,24 11:2,3,11,21,22 12:7 13:9,15,22 14:12 16:12 17:3 17:7,18,22,23 18:5 21:19 28:14 28:22 29:2,7 34:12 37:5 42:5 45:6 45:11 49:22 51:24 57:9,13 58:13 59:10,18,22 60:3,5,7,19 61:2 82:18,21 83:2,4,7,9,21 84:7,16,20 84:24 87:20 91:17 97:6,8 101:21 104:15 105:5 108:6 109:25 112:18 143:13,21 172:18 173:25 196:9 reported 170:16 reporter 1:23 4:2,7,23 5:9 6:21 14:19 20:23 157:11 reporting 4:13 170:8 reports 82:25 171:15 represent 5:10 154:10 representative 51:2 59:2 186:13 represents 94:8,9,13 155:4,5 159:9 request 6:25 8:18 require 54:12 Requirements 134:12 135:19 183:23 requisite 112:4 research 54:15 62:16,17 99:10 119:24 123:24 124:10 125:2,19 126:11 128:10,13,16,20 135:7,16 142:16 152:13 172:14,16 193:2 researcher 135:15 168:18 169:2 193:8 researchers 100:13 researches 187:17 193:3 reserved 3:12 resin 24:3,4 34:21 resins 23:5,6,13,21 34:19 35:7 178:12 179:6 184:5,8,17 185:2,4 187:20,23 respect 9:20 12:6 14:5 19:18 28:4 28:16,25 29:3,24 30:16 33:12 35:16 36:7 37:2 39:14 43:8 44:12 45:23 56:12,20,23 57:4 58:13 63:5 66:21,24 89:25 101:8 103:7 117:13 191:6 respected 135:12 respective 1:21 3:6 responding 6:8 response 7:10 47:19 49:17 57:24 59:4 63:3 68:24 75:12 81:17 82:14 89:10 102:2 113:4 120:3,11</p>
---	---	--

148:8 160:7,25 164:12 183:4 responses 6:21 responsibility 39:12 rest 69:5,8 result 46:25 90:3 108:11 110:6 115:22 119:11 158:11 results 21:11 28:17 59:14 83:6 91:21 98:24 102:18 113:19 115:19,22 117:4 118:14 119:10 122:23 130:8 165:8 167:22 170:2 170:8,17 187:2 retention 92:20,23 retired 136:23 Revenue 185:18 review 17:25 84:14,18 100:19 139:3 152:20 157:6,12 163:22,24 reviewed 10:16,16,17 11:20 53:8 56:8 100:16 131:21 133:6,11,17 137:18 142:23 152:18 163:8 169:16,19 171:2,5,14 175:16 reviewing 17:4,15 18:4 58:12 reviews 162:25 163:3,9,11,20 rewind 69:2,23 75:14 76:25 right 9:19 13:7 17:23 19:19 21:14 24:22 25:20,22 27:2,6 28:12 30:3 30:14 32:11,17 35:24 36:3,9 40:19 41:7 42:10 46:6 47:2 48:12 54:5,6 55:18,23 56:10,12 57:23 58:17 60:3 63:16 65:3 66:2,16 68:19 70:3 72:25 74:8 75:20 77:19 78:3 80:12 86:17 90:4,19 91:25 92:4 94:3 96:19 97:21,22 98:12 103:7,10 104:20 106:11 111:20 113:9,10,13,16 116:4,15 120:24 121:16 122:4,8,18,23 123:20 126:3 129:22 140:12 144:14 146:17 147:13,22 151:14 151:18 152:7 153:7,9 154:3 155:8 155:25 157:2,3 159:5 160:10 161:14 164:25 165:5,13 169:19 169:21 177:14 181:10 182:16,18 185:8 188:23 189:23 190:5,14,15 190:18 192:2,9,13,24 193:6 194:7 right-hand 30:10 rights 51:5 rinse 79:13 rise 152:3 road 2:4 8:13 robotic 73:8,14,16 74:10,22 75:16 76:2,5,12,17 robotically 74:19 room 98:12,15 122:3,7,10,11,12,22 123:3,9 126:16 159:13 166:3 rounded 115:10,12 routine 146:18 RSD 187:6 rubberized 73:10 ruins 159:17	rule 4:5 187:22 ruler 64:20 65:3,20 68:13 rules 8:12 11:6 ruling 177:3 run 45:9 67:23 80:25 81:2,3,4,4 92:21,25 93:3 96:20 99:11 117:14 117:15 146:6 177:9 191:25 running 79:6 <hr/> S <hr/> S 1:4 2:2 196:6 S-T-E-W-A-R-T 180:16 safeguards 88:2 SAM 2:19 sample 42:15,19,24 43:6,11,21 44:16 47:4,10,22 48:4,7,16 49:8 56:25 70:21 71:12,13 74:16,25 75:2 77:13,13 80:10 81:10 85:5 85:16,20,21 86:15,16 87:4,5 88:8 90:2 93:3,21,22 94:18,20 95:4,21 95:22,23,25 96:3,21 98:4,5,25 105:20 108:19 113:7,8,19,20 114:23,24 116:22,25 120:9 131:24 151:15,16,17 155:4,5 159:16 188:16,21,21 190:10 192:7 sampled 117:4 sampler 72:12,12 73:4,7 74:10 76:4 77:6,10 samplers 75:16 samples 47:13,14,24 48:23 56:22 58:10,19 60:14,20,21,23 62:15 65:15,21 81:3 87:8,22,25 88:6 96:7 99:13 103:2 104:17,24 111:11 113:2,16 116:22 117:6,14 117:25 121:21 122:4,8,13,15,16 122:21 123:4,19,23,25 124:24 126:8 129:22 130:18 132:21,23 140:21,24 141:3,7,8 142:20 143:8 143:9 145:7,10 146:14 149:2,8,12 150:16 152:9 157:23,25 159:25 162:5,10 170:17 177:10,14 187:2 187:6,18 188:25 189:24 190:2,8,9 190:12 191:7 192:13 193:19 sampling 82:17 110:8 112:25 114:2 116:21 130:16 141:6 149:21 151:24,25 191:19 193:3 satisfaction 13:14 satisfy 13:14 saw 144:7 163:14 saying 94:4 110:22 111:9 116:12 139:11 146:13 147:25 163:9 167:16 184:13 185:2 187:11 190:7 191:19 says 14:2 30:10 105:5 127:9 135:21 136:14 140:18 141:19 144:14 146:17 154:4,11,13 167:22 170:15 171:18 180:9 184:2	186:23 188:8 scab 22:3,6 scale 112:11 scalpel 157:23 158:2 168:14 scans 10:19 scar 22:3 scars 22:4 school 168:22 science 119:25 120:15,16 169:3,14 169:23 171:4 174:4 179:2,23 183:21 scientific 16:19 18:12 20:7 34:9 48:22 50:6,11 54:15 75:5 111:7 120:14 148:23 162:4 167:8 169:6 172:21 scientifically 152:4 scientist 106:22 126:2 scientists 138:12 167:3 176:18 screen 12:11,13 17:11 scroll 13:19 16:23 157:15,19,20 158:9 161:19 SCULLY 2:10 SDO 51:10 53:11,14,18,22 54:2,18 54:20,24 55:3,7,14 56:3,6 SDO's 55:7 se 161:23 sealing 3:7 second 62:9 63:22 64:3 66:5 139:23 143:24 156:10 180:21 secondly 145:5 seconds 69:14,18 70:12 71:3,8 Secret 124:11 125:20 128:16 132:7 141:2 185:15 section 11:22 14:8 15:7 21:20 57:15 57:16 59:12,14 157:17 158:11 security 142:18 see 12:12,16 13:18 16:22,24 18:8 35:9 41:21 42:16 45:5,21 46:4,21 48:9,11 63:13 65:24 72:18 75:14 76:25 79:9 87:13 90:12 93:6 98:20 99:13 101:22 103:9 104:5 104:25 107:20,21,25 108:2 136:2 137:8,8 140:7 141:14 144:14,19 146:20,22 151:9,11 152:12,19 153:4 154:13,15,22,25 155:12 156:8 157:8,23 158:14,17,20,22 160:19 161:5,7,11,15,18 162:21 168:4 170:21 171:7 188:15,19 189:15 192:5,7 193:24 seeing 117:22 119:8 163:5,16 189:17 190:16 seen 29:23 103:3 104:16 120:8 140:13 146:4 154:7 162:10,12 179:25 193:7 seize 173:22 select 37:4 selected 186:6,15 selecting 87:25
--	---	---

<p> sell 39:8 178:20 sells 178:20 sense 23:9 38:21 54:25 87:21 152:4 152:12 158:24 166:9 169:10 193:6 sent 12:10 137:25 sentence 58:23 146:16,21,22 separate 4:10 45:13 50:9 71:23 separated 67:21 93:11 separates 92:10 93:14,15 separating 82:3 160:4 sequence 128:9 series 6:7 26:11 serious 189:13 seriously 135:23 Service 124:11 125:21 128:16 132:8 141:3,4 185:15,18 Services 125:18 128:14 set 7:20 113:16 122:17 192:5 197:7 197:15 sets 65:21 85:9 setting 7:17 10:11,13 116:17 191:22 seven 13:24 16:11 44:19 154:4 170:16 shake 69:19 70:8 71:5 shaken 70:25 shakes 69:10,17 70:23,23,24 71:8 shape 127:25 151:17 192:17 sharp 158:2 SHEARMAN 2:16 shirt 68:4 shooting 182:15,18 shot 79:9 show 33:25 80:23 132:17 143:9,16 145:17 147:6 153:12 162:4 172:15 173:22 188:5 showed 143:19,20,23 167:22,24 185:3 187:3 showing 108:3,20 138:3 152:7 153:21 155:9 162:17 shows 91:25 148:24 189:24 191:3 shrink 12:14 side 17:20 87:18,24 88:8 122:11,12 176:25 193:10,10 sides 16:15 signature 13:17,18 110:9 112:6 signed 3:16,18 195:19 significance 31:5,8 significant 21:8 28:21 140:22 145:3 147:8 149:9 171:16 172:20 186:12 similar 89:16 174:25 Similarly 89:25 simple 38:6 54:13 93:5 95:20 simplified 56:16 simply 84:7 single 38:3 110:23 111:10 112:23 </p>	<p> 142:12 sir 7:18,21 8:11 39:13 49:18 161:2 sit 68:19 69:19 sitting 100:22 118:12 situation 165:17 situations 182:25 six 21:6,13 24:21,25 101:14 102:12 104:5,8 105:12 117:15 136:5,17 137:12 138:2 191:4 sixteen 61:13 63:9,15 113:5 size 114:23 116:22,25 skip 140:10 slash 51:22 86:7 slide 143:17 153:11,12 154:2 188:5 188:7 196:10,11,12,13,14 slides 139:24 slow 132:18 slower 132:10 slowly 184:11 SLR 95:12,13 small 154:9 smaller 161:10,12 193:15 194:8 smell 98:16 smooth 25:14,16 132:12 smudges 68:5 software 93:23 solely 108:12 solution 38:21 40:8 49:14 66:15 67:2 68:19 71:20,22 72:2,5,15,21 74:7,21 75:25 77:7 81:4 solutions 117:3 solve 167:7 solvent 21:23 24:5,6,7,9 42:15,18 47:18 58:6 65:12,13 66:11 68:11 95:11 96:7 97:17 98:14,20 99:2 101:19,21,24 102:13,17 103:9,14 104:14,25 105:21,25 106:13 107:14 109:6 129:4 132:25 133:22 134:14 135:3,22 139:20 141:21 144:25 149:3,4 150:19,24 151:13 152:2,13 166:17 167:17 168:8 174:7 181:19 183:24 184:6 189:15 191:3 193:15 solvents 23:4,21 24:14 26:19 33:4 33:24 34:4 35:7 57:2 98:16 109:9 129:15 136:12 141:17 178:8,23 179:5 184:5 187:25 somebody 68:2 99:25 128:5 134:4 172:15 sop 47:20 Sophie 151:6 sorry 20:15 41:9 58:2 72:24 81:25 86:4,8 92:2,3 105:7 108:17 117:24 120:5 157:3 163:23 178:5 sort 17:10 22:11 39:10 46:21 54:11 73:24 75:6 81:25 90:8,10,10,20 124:9 128:18 135:11 149:5 156:21 160:15 175:16 178:22 </p>	<p> 182:3 183:13 189:11 191:12 sound 109:23 141:24 sounds 147:2 181:7 sources 149:25 164:17 South 130:24 131:6 145:15 Souther 176:25 SOUTHERN 1:2 space 40:8 Spain 145:15 span 135:21 spanning 104:6 speak 142:6 speaking 126:14 160:16,22 spec 81:12 specialized 59:3 73:9 specific 33:23 88:12 93:11 specifically 22:11 29:21 42:21 48:19 134:16 164:4 177:7 179:19 specified 180:11 specify 49:4 Speckin 133:3 137:16 138:20,24 175:8 Speckin's 176:10 Spectral 26:13 35:13 spectrometer 92:12 spectrometry 26:18 27:5,9 137:16 153:2 speculative 145:24 165:23 189:17 189:18 spend 9:3 spent 9:10,16,18 10:4 spilled 165:10 split 15:25 splitting 182:10 spoke 10:7,10 spoken 193:4 spot 49:8 spots 45:7,8 spreads 193:9 ss 195:4 stabilize 21:6 stabilizes 24:20 stable 166:18 Staedler 159:4 161:4 stage 21:13 stages 106:10 stand 104:20 112:8 standard 16:20 18:12,15,24 19:2,4 19:8,10 34:8,10,16 41:25 48:22 49:3,4,20 50:6,8,9,13,14,15,19,20 52:6,9,25 53:6 54:19,22,24 55:4,5 55:8,10,13,14,15,16,21 64:10 65:7,8,10 66:10 81:3,6 82:11 84:11 92:21,25 96:23,25 97:11 111:7,20 113:23 114:7,8,9,19,21 114:24 115:18,23 116:3,23 117:9 117:12,24 119:17 167:24 178:2 standardized 75:10 </p>
---	--	---

standards 51:3,4,6,8,9,13,23 52:3,4 52:11 53:11,15,23 54:2,25 56:4,7 57:3 81:2 84:9 94:22 97:10 102:5 125:22 standing 64:17 standpoint 98:10 stands 50:11 53:12 start 16:12 49:6 70:12 72:25 73:15 74:5 105:9,13 124:6,15 155:24 182:10 started 125:17 135:9 starting 57:21 78:10 90:21 160:23 starts 22:3,9 45:9 70:10 72:20 97:19 161:7 173:20 191:13 state 1:24 5:18,22,24 16:13 20:12 21:5 24:19 42:13 104:15 195:4,23 197:5 stated 112:3 136:14 150:4,6 179:5 statement 104:20,22 105:4 109:13 112:8,20 127:8,12 129:14 133:21 135:20,25 136:20 139:25 140:17 141:18 144:19,22 145:25 167:2,9 167:11,21,25 172:17,18 174:5,9 180:8 183:25 186:10,17,23 statements 136:3 184:23 states 1:2 172:23 173:3 stating 152:21 statistic 118:23 statistical 119:15 120:16 121:10 186:6 statistically 123:14 193:18 statistics 100:4 120:18,22,23 stay 88:16 91:2 103:17 148:17 182:14 188:2 staying 105:14 stays 24:12 Stenotype 1:23 step 47:9,11 61:20,21 63:15 88:7 93:24 steps 63:14 83:10 STERLING 2:16 Stewart 135:10 180:15 stick 64:25 105:16 106:16,25 stipulate 4:22 121:23 stipulated 3:4,10,15 4:2,14 5:5,6,7 5:8 STIPULATIONS 3:2 stir 69:8 stop 47:20 77:8 145:3 stops 191:13 storage 180:21 183:9,12,13,15 stored 25:10,10 104:11,11 126:9,15 126:19 127:10 150:3 164:18 173:15 193:20 straight 88:17 90:2 91:3 128:11,17 128:24 129:5,16 strain 17:10 strep 159:16	stroke 88:20 90:16,18 127:25 strong 100:5 107:6 112:6,12 118:6 119:8 studied 146:20 studies 132:16 147:24 164:9 166:11 166:16 170:7 study 127:20 134:18 135:13 140:3 148:23 151:7 163:22,24 166:22 170:21 173:10 186:21 191:3 subject 10:12 138:18 164:20 176:3 submitted 54:2 subparagraph 20:12 subscribed 195:19 subscript 95:14,15,16 subsections 14:16 substance 67:18 sucking 70:13 suddenly 166:10 suffer 8:6 sugar 32:16 82:6 suggest 40:13 102:22 152:13 suggested 184:8 suggesting 147:22 Suite 2:4 summarize 21:20 23:18 28:5 summarized 29:13 summary 11:3 14:2,9 15:3,17 21:5 sums 11:25 supply 191:25 Support 139:20 supports 119:8 supposed 11:10 sure 32:6 43:22,22 57:7 70:14 73:25 77:9 79:7,14,16,21,22 80:2 84:17 87:10,16 88:5,7 89:2,19 97:7 102:14 117:2 119:4 124:25 130:18 142:8 145:14 149:15 153:3 162:16 168:13 174:20 176:12,15 178:24 192:14 surfaced 25:14 surprise 160:17 surprisingly 167:22 suspect 190:20 Swan 6:2 swear 4:21,24 SWGDOC 34:10 49:3 50:8,9,11,18 50:23,24 51:6,7,22 52:3,24 53:18 53:25 54:3 55:20 57:3 sworn 3:18 5:17 6:9 197:7 symbol 95:10,16,18 syringe 69:21,21 70:13 76:13 79:22 system 91:20 93:6,10	tail 90:21 tailing 90:24 take 6:18,22 8:15,16,17,20,21,22 35:6 37:22 44:17,19 47:10,13,21 48:10,24 49:8 58:8,18 60:8,15 62:5,6 63:7,7 64:14,19 87:22 89:4 89:5 91:5 94:19 109:17 112:20 118:17 122:3,8,15,16,21 129:21 130:17 131:3 141:7,8 153:17 156:9 164:22 177:13 190:19,21 192:2 taken 1:20 44:15 91:8,11 153:20 156:11 168:13 190:24 195:8 takes 24:25 75:3 76:13,22 talk 18:2 36:19 58:7 101:20 112:25 132:16 140:3 182:17 talked 113:5 140:11 187:20 talking 91:19 137:20 141:16 146:24 156:8 164:16 175:15 180:2 182:3 191:10 192:25 talks 59:12 taller 64:19 tap 69:13 70:8 tape 147:15 target 182:16,19,19,20 technical 51:2 technically 25:15 Technique 153:2 technologies 27:12 technology 136:15 137:2 156:6 teens 104:16,23 telephone 4:11 tell 6:9 28:12 31:19 33:19 37:8 40:21,22 41:11 43:18 47:4 58:12 59:18,22 60:5 99:10 102:4 109:2 114:6 115:10 118:12,18 139:4 153:7 159:8 171:11 172:8 176:24 189:14 telling 96:23 117:11 120:13 163:7 tells 48:23 109:7 121:13 temperature 122:3,4,7 123:3,9 124:4,8,17 126:16 159:13 temperatures 124:7,13 ten 68:16 69:18 71:3,8 72:20 73:5 73:15,16 74:6,11 75:15 77:6,10 77:15 78:10,12,20 79:3 110:14,20 111:7,13 117:15 term 19:13 20:25 22:13,16,20 23:8 31:24 32:23,25 41:2,3 51:19 62:22 66:16 97:13 terminological 18:13 terminology 16:20 18:12,15,20,22 18:23 19:5,8,11,11,14 20:8,9 32:9 terms 26:20 31:9 94:13 117:23,25 130:8 132:2 137:3,4 170:10 191:25 test 21:11 34:10 49:20 50:10,15,19 86:11 93:2 104:7 113:8 143:8
---	---	---

<p>146:12 148:4 172:11 174:24 tested 85:25 124:11 testified 5:19 39:20 46:3 108:10 109:11 116:8 148:19 testify 7:23 8:3 109:5 testifying 11:5 109:16 138:17,21,22 175:3 testimony 8:25 40:16 85:9 127:24 142:3 175:22 176:3,4,8,11,14,22 176:23 177:13,17,18,21 195:8,11 197:9 testing 11:23 26:18 31:10,16 32:5 51:13 52:5,25 53:15 59:14 60:13 61:10,18,18,19 62:2,10 88:9 89:18 99:11 111:3 129:9 143:9 144:15 145:4 149:7,19 170:22 171:9 172:6,10 189:19 192:24 tests 91:14,17 text 30:7 100:18 textbook 164:2 Thank 18:7 178:2 194:10,12,13 theoretical 191:23 theory 83:8 152:6 191:18 192:15 193:13 thesis 103:7 104:24 thick 25:16 48:17 89:3,23 Thin 26:14,25 42:12 thin-layer 125:10 thing 22:7 27:9 39:10 54:8 80:6 88:5 103:21 115:13 145:12 155:22 159:14,24 172:24 173:4 189:12 192:12 things 27:10 52:14 126:17 141:6 150:15 156:6 177:5,10 187:15 193:6 think 8:12 10:7 11:19 13:17 14:9 22:2 30:21 32:8,13 35:22 43:24 44:25 46:3 67:23 68:3 70:10 81:8 94:2 98:11 99:23 106:4 109:13 120:5 125:16 127:23 128:25 129:18 130:7 133:25 137:5 139:10,24 140:9 143:4 148:8,15 154:21 155:21,23 156:5 159:19 163:15 169:13 172:3 173:25 176:6 182:2 thinking 88:21 thinner 182:11,11 third 74:2 76:22 79:2 137:25 143:17 third-party 55:6,17 thirty 155:17 thought 107:7 thousands 75:9 82:25 three 9:5,5 19:25 23:19 32:20 43:18 43:20,24 44:2,10,23 45:6 46:22 47:6,7,8,21 48:4,10 60:12,17 61:3 61:6 78:18,21 80:7 86:4,9,12 107:19 117:15 136:5,18 148:16</p>	<p>185:6 190:11 threshold 62:23 101:3,5,9,17 102:16,20 107:2,8 108:11,13,14 111:8 112:5 120:7 121:12 123:15 134:2 142:17 170:5,18 182:5,8 189:2 throw 107:23 time 1:23 3:12 5:3 7:6,6 8:16,16,17 8:21,22 9:3,10,18 10:2,4,10,11 22:6 25:2 46:8 54:18 70:2 74:2 75:8 76:22 79:16 81:9 82:11,13 91:25 92:7,13,20,23 93:11,15,15 97:3 125:23 126:3 130:13 135:21 151:2,14 152:3,14 155:8,20 158:7 158:23 160:12 161:8,17 162:5 163:21,23,25 167:5 168:3 182:17 185:20 189:3 191:8,9,10,12,20 192:4,22 193:14,25 194:5,10,10 timeframe 136:9 timeframes 136:5 times 8:9 61:10,11 71:10 75:10 79:19 82:7,9 92:17 95:14,23 99:12 101:18 104:18,19 107:2,19 111:4 117:16 142:9 148:16 193:5 timing 155:11 title 12:22 titled 143:17 TLC 26:15,25 27:17 32:4 33:10 34:14 35:2 36:14 42:13,14,20 45:4,10,19 46:12,21,25 47:11 48:2 49:9,25 50:2 56:23 58:24 today 5:11 6:7,20 7:11,16,24 8:4 13:3 100:22 118:12 143:20,24 162:12 180:6 194:11 today's 8:25 9:12 10:3,3,15 told 175:10 Toni 1:23 4:23 5:17 12:9 13:12,19 15:10 16:24 137:24 143:16 153:12 154:17 161:20 163:19 188:7 197:4,19 tool 65:3,6,20 68:12 top 13:25 15:18 16:2 73:10 77:20 77:21,25 78:13,17 88:24 131:10 138:5 149:15 154:10,24 total 10:9 totally 8:18 17:12 136:21 trace 23:22 35:3,7 track 78:9 177:21 tracked 190:10 trained 134:16,19 training 37:18 138:15 trances 113:6 transcript 7:5 109:12 195:8,10 197:8 transfer 47:17 transposing 155:24 trap 106:7,9 trapped 188:2</p>	<p>traveling 76:2 travels 72:16 treat 98:6 treated 60:21 treating 140:22 trey 76:4,5,5,6,11,12 77:18 trial 3:13 14:13 16:9 tried 68:4,5 true 104:4 138:16 190:14 195:10,12 197:8 truly 146:7 147:5 trust 133:16 161:22,24 truth 6:9 truthfully 7:24 8:4 try 9:23 57:25 88:17 89:15 101:11 105:10 167:3 175:19 trying 9:25 10:6 17:10 38:17 60:24 71:4 78:9 102:10 106:13 119:14 120:15 123:14 141:5 turn 13:23 103:5 turned 51:5 turning 135:18 158:16 turns 68:7 twelve 101:13 136:6 twenty 191:11 twice 61:19 73:24 76:21 85:23 86:11 113:8 117:15 two 14:24 15:13,14,17 21:9 27:11 30:13 32:14,14,19 34:3 39:25 41:25 49:11,16 53:20 61:11 62:5 62:25 64:11,15,17 65:6 66:4,8 67:16 75:21,22,23 76:7 77:22 78:25 80:4,20 81:19,20 85:9 86:21 87:5 93:15 96:6 99:5,14 101:4,8,17 102:23 103:2,22,24 104:17 105:8,14,16 106:15,16,25 107:6,22 108:3 110:11,16 113:2,6 113:15,20 114:3,13,18,24 116:11 116:22,22,25 117:4,21,25 118:5 118:10 119:6 120:9 121:11 122:15,16,21,22 123:4,4 134:2,5 136:8,11 140:21,23 142:3,14,17 142:17,19,22 147:10,15,19,20 148:15,17 157:24 161:16 167:19 168:10 170:6,11,12,15,16 174:6 180:17 182:5,7,8,13,19 183:9,11 184:4 185:24,25 186:25 190:25 192:6,18 193:24 two-year 102:20 type 23:22 25:13,17 26:8,10 29:15 32:15 33:9 38:5 99:11,13,24 106:3 111:17 126:17 132:2,9,13 132:17 types 23:15 53:21 54:17 85:12 160:13 163:4 184:8 typically 43:18,24 49:10 60:12 61:3 70:11 82:4 88:19 94:7 95:9 107:25 112:24 132:9 159:12</p>
--	--	--

162:25 165:21 191:20 typographic 16:5	usually 14:7 44:17 112:22 132:11 utilized 27:14 52:21	165:20 180:10,14,20 volatiles 165:21 vortex 69:15,16,16 70:9,19 71:2,7,8 71:18 vote 54:22 voting 55:9 VSC 26:13,22 33:6 35:14,20 41:22 45:19 46:13
U	V	W
UK 112:9 ultraviolet 33:7 un-objected 156:7 unable 39:20 unauthorized 4:18 uncertainty 120:8 186:25 187:19 193:17 194:6 uncommon 174:13 undergraduate 50:3 underlying 97:17 105:18 153:24 underneath 77:19,21 96:6 154:12 158:19 understand 6:14 7:15,19 11:13 17:12 52:23 65:24 66:20 72:18 82:2 105:18 107:12 118:10 119:12 120:13 121:2 128:19 147:18,24 148:8 150:22 156:5 163:6 165:6 167:15 171:8 178:5 183:6 187:11,21 189:5,11 191:12 193:11 understandable 6:17 understanding 11:7 20:24 40:16 45:10 55:2 85:8 154:23 160:9 understood 6:19 32:6,8 102:14 133:23 unheated 58:10 60:21 61:12 63:10 63:11 64:8,12 66:5,24 71:13 80:12 86:16,20,20 89:5,17,17 93:22 94:18,20 95:3,5,21,23 113:7 129:21 130:4,12 145:8 149:16,18 151:15,17 155:4 160:4 162:5 191:7 uniform 71:22,24 72:2,5,21 74:7 75:25 77:7 151:14 194:2,4 uniformly 150:20,22,23 unit 54:4 UNITED 1:2 University 168:20 unknown 52:18 unreliable 177:5 uptake 164:10 use 12:23 18:23 19:5,13 20:25 22:13,16,20 23:8 31:21,24 32:9 32:25 34:18 39:9 41:2,13 42:18 42:20 43:24 44:5,21,22,23 50:5 52:25 53:15 54:4,18 55:5,8,13 59:6 60:11,12,23 61:3,6,12 62:22 62:23 64:9 65:14 67:2 68:3 73:3 77:14 82:4 84:8 86:9,10 92:21 94:22 96:17 97:13 100:2 101:17 105:23 111:24,25 112:10 114:9 125:3 132:9 142:3 170:5 172:6,8 174:7,25 178:18 182:7,16 uses 74:10 125:12	VAGNINI 2:3 vaguely 144:7 Valery 125:6 validated 174:22 validation 99:13 validations 100:8,11,14,19 VALLI 2:3 value 62:11 65:19 96:25 102:22 110:10 112:20 118:25 119:22 123:14,15 186:24 values 62:25 99:15 104:6,16,23 115:6,8 118:6,7,19,21 119:6,9 122:18 126:22 146:3 170:15 187:6 variability 187:4 variables 128:20 145:24 variance 113:18 161:25 variances 160:19 variation 99:22 104:6,13 151:22 158:5 variations 96:24 140:23 174:15,18 various 56:9 vary 90:14 178:8,10,12,14,17 179:6 179:7 182:6 varying 80:18 153:13 verbal 6:21 57:24 113:4 164:12 versus 90:2 104:8 129:13 130:2 151:16 166:14 178:21 183:16,17 194:7 vertical 188:17 vial 47:17,22,25 48:4 62:6,9,12 63:19,22,24 64:3,5 66:4,5,21,22 66:24 67:6,8,10,11,13,16,19 68:23 69:3,24 70:24 71:23 72:7,9 72:10,14,19,20 73:4,9,9,12,23 74:6,19,20,22 75:22,22 76:3,7,10 76:15,16,18,20,21,22 77:2,3,16 77:18,22 78:5,6,10 79:17 80:11 80:12 89:5,7 vials 56:25 62:5,10 64:12,15 65:6 66:4,8 75:20 76:7,8,8 77:22,23 vicinity 62:8 Video 26:13 35:13 videoconference 4:9,15 view 19:15 118:9 violation 4:18 virtually 19:16 106:21 visible 154:18 visual 26:6,6 27:16 29:5,10 34:13 35:17 36:2,6 visualize 45:19,20 46:4 VOC 23:8 25:21 VOCs 23:12 33:20 volatile 20:14 23:4,6,8 33:14	wait 67:17 waived 3:8 walk 61:15,20 want 7:4 19:23 42:3 48:12 65:24 84:6 88:7 89:15,19 100:2,3 106:24 124:4,5 142:7,7 147:9 148:7 156:2 157:11 162:25 175:12 179:12 187:21 188:5 190:21 192:25 wanted 60:25 122:2 123:9 157:6 wants 79:16,22 wasn't 44:9 172:15 waste 73:23 74:19,23 75:22 76:3,6 76:15,20 77:22 watch 83:14 water 68:5 way 6:13,16 17:2 22:8 27:13 34:7 48:20 57:25 65:18 73:19 99:24 103:13 111:24 117:25 119:2 123:8 124:14 135:6 150:4,6,22 159:19 168:12 183:3 187:17 197:13 ways 54:15 we'll 8:21,22 13:5 20:24 103:5 106:12 we're 7:17 12:3 15:25 20:25 36:20 68:14 73:18 78:24 94:24,25 97:2 100:6 116:18 119:5 130:11,12 149:16 152:9 156:8 we've 36:5 137:6 web 1:22 4:11 5:12 website 51:7 Wednesday 194:14 weeks 103:24 well-established 116:12 well-known 133:23 well-regarded 169:6,9 well-respected 134:17,19 well-ventilated 166:3 went 10:20 108:14 125:18 wet 24:11 Weyermann 126:25 134:9 135:12 135:14 151:7 152:17 166:21 168:15,24 169:25 174:3 183:22 184:20,23 188:14 whatsoever 31:24 32:25 118:4 WHEREOF 197:15

<p>wide 116:24 widely 111:6 153:13 window 189:3 wish 8:16,17 17:25 withdraw 77:6,10,11,15 Withdrawn 142:21 witness 1:20 4:8,9,21,24 5:2,11,16 13:16,21 14:20 15:5,12,24 20:3 153:17 157:15,20 158:9 194:12 194:16 196:3 197:6,9,15 witness' 13:13 word 31:21 34:18 41:13 44:5 100:3 131:3 words 40:9 88:11 work 27:12 56:8 84:4 90:9 100:12 108:7 118:23 125:4,5 126:24 127:16 128:10 131:6,12 132:7 133:2,8,9,12 134:14,24 135:16 139:14 141:13,14 151:5 168:6,7 168:25 169:23 172:21 183:24 184:18 187:9 worked 137:7 141:2,3,4 185:7,14 185:15,20 working 9:18 10:4 16:19 18:12 20:7 34:9 50:11 135:16 works 11:8 42:10 101:2 123:22 140:15 169:15 worksheet 115:12 world 52:22 118:16 138:24 wouldn't 37:17 38:2,8 102:15 105:19 118:13 126:21 133:16 139:12 148:16 161:22 166:9 175:12 wrapping 145:23 write 30:8 54:19,24 60:16 90:21 writing 29:3 30:11,17 34:11 37:24 38:22,25 39:25 43:3,5 49:3,21 50:10,16,19 90:7,21 128:9,15,18 128:22 130:22 133:4 137:14 141:11 149:5,6,8 179:22 written 4:17 10:25 30:7 37:23 39:25 40:10,10,14 42:16 59:2 82:24 84:11 86:25 175:8 179:21 wrong 40:17 97:19 106:23 123:7 142:9,10 wrote 130:15 164:2 173:8,10</p> <hr/> <p style="text-align: center;">X</p> <hr/> <p>X 1:3,14 92:3,4 155:7,10,18 158:22 158:22 188:16 196:2,6</p> <hr/> <p style="text-align: center;">Y</p> <hr/> <p>Y 81:8 91:25 92:2 93:25 158:22,23 188:17 yeah 14:9 15:7 31:21 86:19 89:21 90:5 92:19 112:21 125:16 130:24 131:5 132:8 153:11 162:24 165:6 189:10</p>	<p>year 51:5 99:12 101:4,9,17 106:16 111:5 134:2 136:8 141:23 142:2,3 142:17,18 170:16 171:22,23 182:5,8 185:24,25 years 21:9 37:10 62:16,25 75:9 99:6 99:14 101:24 102:23 103:2 104:17 105:8,15,16 106:15,23,25 107:6,22 108:3 110:11,16 111:4 116:11 120:9 134:6 136:11,24 138:2 142:14 148:17 167:19 168:10 170:6,12,13 172:13 182:7 182:13,19 188:3 191:4 yield 186:24 187:5 yielding 170:17 York 1:2,25 2:4,8,8,13,13,18,18 5:18 47:15 177:2 197:5 you' 17:15</p> <hr/> <p style="text-align: center;">Z</p> <hr/> <p>zero 189:3 Zoom 4:11</p> <hr/> <p style="text-align: center;">0</p> <hr/> <p>0.5 59:25 61:25 005 77:15</p> <hr/> <p style="text-align: center;">1</p> <hr/> <p>1 12:19,20 16:16 86:12 143:22 196:9 1-10 1:11 1.2 107:24 108:5,15 1.5 49:15 1:00 91:10 10 67:10,18 72:4 194:7 10:11 1:15 100 95:14,23 96:19,22 118:8 124:12 124:14,16 10001 2:8 10004 2:13 10222 2:18 11 133:19 185:21 11530 2:4 11th 197:16 12 105:11 196:9 12,000 185:21 12:15 91:7 14 49:22 144 196:10,11 14th 2:8 15 99:15 150 96:21 153 196:12 156 196:13 16106 6:2 18 101:7 111:4 170:19 18-cv-08188 1:7 188 196:14 1960s 136:23</p>	<p>1980s 135:9 1986 109:21 1990 125:11 1990s 126:5 1993 75:8 1996 141:20</p> <hr/> <p style="text-align: center;">2</p> <hr/> <p>2 4:5 143:25 144:3 196:10 2-PE 20:16,22,25 21:5,10 22:12 23:3 24:20 33:17,23 56:15,20 62:11,12 66:14 80:23 81:7,11,13 81:16 82:11 89:13 92:19,22 94:2 94:10,25 95:4,6 105:24 106:8,9 106:12 107:4,15,17 108:2,18 110:8 111:20,21 112:16,17,24 121:21 124:15,15,21 126:23 132:13 134:4 135:2 139:18 140:4 143:10 144:16,18 145:17 146:13 147:2,5,7,12 148:12 150:2,11,16 152:2 165:24 2-phenoxyethanol 20:15 21:2 62:15 106:8 111:16 133:5 137:15 145:2 146:4 148:6 2-phenoxyethol 33:17 20 14:16 120:10 20(a) 16:12,13 20:12 20(c) 28:6 200 96:20 2000 133:18 2000s 133:18 171:24 2010 133:19 179:23 2011 174:5,10 2015 187:14,15 2016 16:16 2017 169:23 171:5 179:5 2021 1:15 195:9,20 197:16 220 2:8 23 15:11,21 16:2 116:14 24 13:20 15:11 16:2 112:7 154:12 158:19 159:5,11 161:21 171:15 172:19 173:14 25 62:22 63:2 99:2,3,7,18,23 101:3 101:10,25 102:22 103:4 105:5 107:2,5,7,9 108:11,20 109:7 110:10 111:14 112:5,13 114:5,11 114:16,16 115:6,8,25 116:2,8,11 116:13,16,18 117:5,6,18,21 118:7 118:11,14 119:21,22 120:7 121:11,18 123:16,17 136:24 142:10 161:9,25 162:2 167:18 168:9 183:2 189:2 190:3,14,16 26 28:16 27 116:13 28 4:5 114:5,13 115:6,14 117:16 119:2 121:13,18 28th 2:12 29 106:22</p>
---	--	--

<div>3</div> <div>3 30:18,20 31:6,7,17,18 33:12,20 34:5,20,23,25 35:4 36:21 37:2,3 38:12,16 39:14,21,22 144:2,4 196:11</div> <div>3/1/16 30:9</div> <div>3:51 194:16</div> <div>30 9:14 10:6 69:13 136:24,24</div> <div>30.5 115:9</div> <div>304 188:8,22 189:4</div> <div>31 28:16 114:6,15 115:7</div> <div>33 58:23,24 114:4,13 115:6,13 117:16 118:25 121:14,18</div> <div>34 42:5,6</div> <div>35 56:13 57:17 58:2 101:6 121:15 155:18 170:15,18</div> <div>36 56:14 57:17,21 58:2,2</div> <div>37 56:14 57:17 58:2,2 119:2</div> <div>38 56:14 57:17 58:2 170:15</div> <div>39 29:14,25</div> <div>393 156:20 157:9 158:13</div> <div>4</div> <div>4 153:15,22 196:12</div> <div>40 29:16 36:8,11 119:2,4 121:15 155:16 189:15</div> <div>400,000 108:4</div> <div>41 36:16,17 41:6</div> <div>42 36:16,17 41:6</div> <div>44 28:17,18</div> <div>45 9:15 10:6 28:17 70:12</div> <div>46 15:13</div> <div>5</div> <div>5 31:3 36:23 155:15,18 156:13,14 196:4,13</div> <div>5*8 64:18,21</div> <div>5.3 93:7</div> <div>5.30 81:11 82:12 92:20 94:3</div> <div>50 124:12 170:5 194:7</div> <div>519 2:4</div> <div>599 2:17</div> <div>6</div> <div>6 188:9,13 196:14</div> <div>6*1 64:18,22</div> <div>6.25 114:25 116:23</div> <div>600 2:4</div> <div>65 123:10,13</div> <div>66 123:11</div> <div>68 183:17</div> <div>69 123:11</div> <div>7</div> <div>7 1:15 195:9</div> <div>70 58:9 62:13 63:24 123:19 124:3,9 124:17 125:12,20,21 154:13 158:20 159:5 161:4,21 183:17</div>	<div>190:4</div> <div>71 183:17</div> <div>75 159:12</div> <div>788 14:25</div> <div>8</div> <div>8 86:12</div> <div>80 123:23,25 124:12,24 125:14 126:5</div> <div>80023 6:3</div> <div>821 113:10</div> <div>827 86:6</div> <div>828 86:6</div> <div>830 86:7,13,25 113:10</div> <div>831 86:7,14,25</div> <div>9</div> <div>90 62:14 63:25 123:19</div> <div>90s 125:16</div>	
---	--	--